EDITORIAL

Air Cleaners and Oil Purifiers

INDICATIONS are that within another year a great many passenger car engines will be fitted with both an air cleaner and an oil purifier, the latter combining a filter and a still or distillator. Up to this year these items were exceptional.

The chief object of the manufacturers in fitting these additional devices is undoubtedly to extend the period of faultless operation, or, looking at the matter from a somewhat different angle, to reduce the service cost. Grit getting into the engine with the carbureter air or produced within the engine itself accelerates the wear of the bearing surfaces, especially if the lubricant is allowed to become very thin through unchecked dilution with the heavy ends of the fuel, and should therefore be kept off these surfaces.

Air cleaners of the types usually fitted are comparatively simple pieces of apparatus, cheap to manufacture and readily installed. Oil distillators, on the other hand, involve a certain degree of complication and generally are difficult to work into the design, requiring considerable room and necessitating certain changes in the engine. But the frequency with which the oil purifier has been mentioned in recent announcements shows that the industry is thoroughly sold on it.

From one point of view the need for this additional apparatus is regrettable—it makes the engine itself less get-at-able. For every such device installed under the hood there is at least one more joint to be broken when the engine is to be taken down, and that much more work. However, presumably the additional apparatus will so much reduce the frequency of tear-downs as to more than compensate for this additional work.

Passenger Car Nomenclature

INCREASING use of "phaeton" in preference to "touring car," some confusion between "coach" and "brougham" in describing two-door, close-coupled enclosed bodies, and additional confusion as to whether "brougham" means a two-door or a four-door car were disclosed by a recent survey of manufacturers made by the Passenger Car Body Division of the Society of Automotive Engineers.

Of the 61 manufacturers making open five or seven-passenger cars, 14 call them "phaetons." Six other makers call their five-passenger cars "phaetons" and their seven-passengers "touring cars." Of the 31 companies making a two-door, five-passenger closed car, 16 call them "coaches," 8 call them "broughams" and 7 use special names, such as "chummy sedan," "two-door sedan," etc.

Because 14 of the 22 companies making a four-door close-coupled closed body model call them "broughams," there arises considerable confusion in the minds of prospective buyers, unless they see a car or a picture of it, just what the term brougham means. This term was originally used to describe cars of the same general type as the limousine but in which the non-collapsible roof did not extend over the driver's compartment. Recent usage, however, has applied the name "town car" to this type body, leaving 'brougham" for owner-driven bodies.

The present source of confusion should be a simple matter to clear up and the Passenger Car Body Division is seeking opinion and comment as to the proper steps to take in recognizing "brougham" and "coach" as standard usage.

Coal as Motor Fuel

WHEN our petroleum wells begin to run low, as they are likely to do within the life time of people now living, the automotive industry has three principal possible sources of motor fuel to which it may look for relief. These are the oil-bearing shale deposits of Colorado and other Western states, vegetable material from which alcohol can be produced, and our coal fields.

The whole subject of the future supply of motor fuel was thoroughly looked into by the Fuel Board in Great Britain some years ago, and the conclusion of that Board was that the chief hope lay in coal. In the great centers of population it will not be possible to devote land to the raising of sacharine or starchy materials from which alcohol could be produced, as all available land is needed for raising food. In the tropical countries, no doubt, there are opportunities for raising large quantities of such material, but the difficulties encountered in producing alcohol therefrom and delivering it to consumers in the chief motor-using districts would be very great.

Coal, on the other hand, is now yielding an excellent motor fuel in benzol as a by-product, and new methods of obtaining larger quantities of volatile liquids from it are discovered right along.

The view that coal is destined to replace petroleum as a source of motor fuel is now confirmed by Dr. A. C. Fieldner, chief chemist of the United States Bureau of Mines, who at a recent meeting of the American Chemical Society pointed out its advantages over shale. When subjected to low temperature distillation it yields about as much motor fuel as the average shale, but it is mined near the centers of population and, besides, the residue is of far greater value than that of the shale. Views to the same effect were expressed on a recent occasion by M. Kling, director of the Paris Municipal Laboratory, who said that as regards substitutes for gasoline, there can be no competition with coal when that product is treated commercially by a low temperature carbonization process.

Our Industry Today

September Production 8 Per Cent Above August, Ford Expected, With Promise of October Increase—Accessories Sales Good

PHILADELPHIA, Oct. 14—September production of cars and trucks was at a record rate for that month for many of the large factories, and the level has been fairly well maintained for the last two weeks. From now on, however, except in the case of Ford, the general tendency will be gradually downward, with probably a sharp drop next month or in December.

Preliminary estimates of the production total for September show a gain of about 8 per cent over August for the industry as a whole, with Ford again excepted. In the case of Ford, the month showed an enormous increase, so that the final figures should be well over the 300,000 mark, against approximately 260,000 for August. The October total will probably be slightly higher than September.

Light Closed Car Production Up

An important factor in holding up production and sales to an unusually high Fall level is the light closed car. The price cuts during the past few months have affected the all-season vehicles more than the open cars. The two classes are now virtually on the same price level, so the normal seasonal demand for closed cars has been greatly stimulated.

Farm demand continues to be the backbone of the automotive market and is offsetting any losses in urban centers.

Comparatively high production will be maintained for some time even if sales fall off materially, since the manufacturers in most cases have no surplus stocks.

Parts and accessories sales are generally holding the better than normal position that they have maintained throughout the Summer. There was an appreciable falling off in some sections at the close of the touring season, but aggressive merchandising of winter necessities and staples by wholesalers is showing results. Tire business remains good in practically all sections. Retail sales made the best showing in September with many merchants still carrying comfortable stocks purchased during the first weeks of the rubber shortage scare.

Rickenbacker New Model Announced

DETROIT, Oct. 11—The Rickenbacker Motor Co. has just announced the addition of a De Luxe four-passenger coupe, listing at $2,320. Simultaneously with this announcement to its eight-cylinder line, price cuts of $75 have been made on both the six-cylinder and eight-cylinder De Luxe sedans. The six-cylinder model now lists at $1,995, and the eight-cylinder De Luxe sedan sells at $2,395.

New Records Made at Mineola Races

Lieutenant Bettis, U. S. A., Sets American Speed Figures. Wins Pulitzer Trophy

MINEOLA, N. Y., Oct. 14.—Breaking all previous American speed records, two world's records and winning the famous Pulitzer trophy, one of the two specially developed 1925 Curtiss racers, flown by Lieut. C. Bettis of the Army, attained an average speed of 248.99 m.p.h. over a closed course of 125 miles at the International Air Races held at Mitchel Field, L. I., on Oct. 12. The other new racer, piloted by Lieut. A. Williams, of the Navy, completed the course at a speed of 241.71 m.p.h.

Although new records were established, the maximum speed attained was a great disappointment to the pilots and officials present. A practice plane, an exact duplicate of the new Pulitzer machines, a few days prior to the race had made 302 miles per hour with a diving start and maintained more than 260 m.p.h. on a straightaway course. A speed of 270 miles per hour had been predicted for the Pulitzer contest and one of the explanations of the slower speed was the engines were not developing the power expected of them. While their planes do not conform to the Pulitzer race requirements in that the landing speed is greater than 75 m.p.h., France continues to hold the world's airplane speed records at a rate of 278 m.p.h.

Anti-Stalling Fokker a Feature

One of the more important civil demonstrations from a development and design point of view was an exhibition of the anti-stalling features of the three-Wright-engined Fokker monoplane. Carrying ten passengers, the Dutch manufacturer several times pointed the nose of the giant monoplane upwards until it lost flying speed. Instead of suddenly dropping its nose into a steep dive or falling into a spin, the machine would automatically sink on an even keel after stalling, gradually gaining speed in its natural angle of glide.

There were very few strictly new machines present. Among the ranks of the privately-owned planes were many machines of war period build present, while quite a number of the United States planes had seen more than seven years of service. The only accident of the meet causing the death of a civilian occurred in the first event of the three days' racing. Had there been compulsory inspection of the aircraft entered in the races, the regrettable accident would not have taken place.

"Casey" Jones, the well known civilian pilot, won all free-for-all races for privately owned two, three and four-passenger planes. His machine was a specially constructed Curtiss Oriole biplane with a 160 hp. Curtiss engine. It is interesting to note that the Oriole was fitted with wing type radiators which were specially developed for the Pulitzer racers and the pursuit ships three years ago.

Dodge Financing Details Announced

Plan Calls for 8% on Unpaid Balance, Plus 80% of Local Insurance Charges

DETROIT, Oct. 15—Frederick J. Haynes, president of Dodge Brothers, Inc., has announced that new financing arrangement affecting insurance charges has been made available to all purchasers of Dodge cars and Graham trucks. Dodge Brothers' credit purchase plan calls for a dollar and cents charge equivalent to 8 per cent on unpaid balance, plus an amount approximating eighty per cent of the local charges for fire and theft insurance in the section in which the car is bought. On a $1,500, car the charges, after deducting down payment of one-third, will be approximately $80 plus 80 per cent of the amount of the fire and theft insurance rate quoted in the community of purchase. The arrangement protects against fire and theft to an amount equivalent to 90 per cent of f. o. b. price. The plan entered into with the Commercial Investment Trust Co. and offered to all Dodge dealers is said to make it unnecessary for the purchaser of a Dodge car or a Graham truck, desiring credit, to pay more than the rate quoted. At the same time, the plan facilitates an insurance arrangement, which is described as not prohibitive or productive of higher financing costs.

Gray Mfg. Co.'s Export Business to Robbins

DETROIT, Oct. 13—Announcement was made today that the Gray Manufacturing Co. had turned over its export business to the Harry M. Robbins Co., exporters, which was formed recently.

The Gotfredson Corp. also has signed a contract with the Robbins company by which the latter will handle its export business.

McFarlan Announces Straight Eight Car

Eleven New Models at Prices From $2,650 to $4,600. Specifications

CONNORSVILLE, IND., Oct. 13—McFarlan Motors Corp. is now producing a straight eight model, which is offered in 11 body models ranging in price from $2,650 to $4,600. The chassis has a 131-in. wheelbase and the engine is a Lycoming H, with a bore of 3-3/16 in. and a stroke of 4½ in. The body types making up the new line are identical in prices and equipment with those sold on the single valve, six-cylinder McFarlan chassis, except that a town car at $4,600 has been added.

The fuel system on the new eight includes a vacuum tank, which feeds from the 18-gal. capacity main tank to a 1½ in. Schebler carburetor with vertical outlet. The starting, lighting and ignition units are of Delco make and the storage battery has a rating of 120 amp. hrs.

The clutch is a Borg & Beck, and, together with the Warner transmission, is assembled with the engine in a unit power plant. Universals are of the metallic type made by the Universal Machine Co., and the axles are Timken. The rear axle is a semi-floating unit with a final reduction of 5.1 to 1, and, as in the six-cylinder models, its torque is taken by an arm. Chassis lubrication also is similar to that used on the sixes, all important bearings being lubricated by oil-cups with wick feed. Springs are semi-elliptic, those in the rear being 58½ in. long. The steering gear is a Ross.

The braking system consists of four-wheel, hydraulic service brakes with the emergency on the transmission, and is identical with that used on the single-valve model. Balloon tires, 32 x 6.20 in., mounted on natural finish artillery wheels, are standard. All body models have front bumpers, snubbers, automatic windshield wipers, sun visors, cowl ventilators, rear-vision mirrors, heat indictators, rear traffic signal, clock, and ignition and transmission locks.

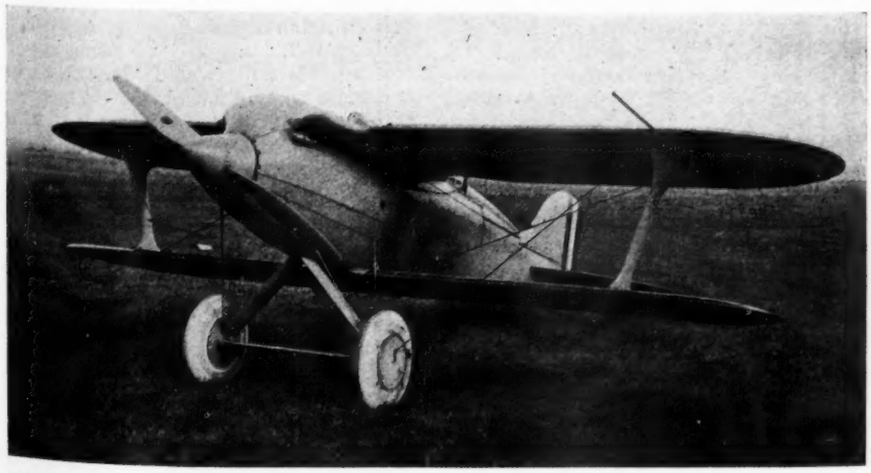
Following is a list of models furnished on the eight-cylinder chassis:

2-pass. roadster	$2,650
4-pass. roadster	2,900
5-pass. touring	2,650
7-pass. touring	2,750
5-pass. sedan	3,180
4-pass. coupe	3,180
5-pass. coach brougham	3,180
7-pass. sedan	3,280
5-pass. suburban sedan	3,380
7-pass. suburban sedan	3,480
Town car	4,600

Several changes also have been made in the two six-cylinder chassis. The SV models now have Delco electrical equipment and a larger battery, which is interchangeable with that used on the new eight. The rear axle reduction on this chassis has been reduced from 4.90 to 1 to 4.27 to 1, and its exhaust pipe diameter has been increased to 2¼ in. The capacity of the fuel tank has been decreased to 18 gal. and is interchangeable with the tank on the eight. On the TV chassis, a Borg & Beck clutch has replaced the former multiple disk unit. DeJon electrical equipment has been adopted, and the battery capacity has been increased.

G. M. September Sales Set Record

NEW YORK, Oct. 15.—General Motors Corp. sales of cars and trucks to dealers by its manufacturing divisions in September were 88,379, a new monthly sales record for this corporation, while sales of General Motors cars and trucks by dealers to users in the same month totaled 83,612, compared with 48,565 in the same month last year. These preliminary figures include passenger car and truck sales in the United States, Canada and overseas by Chevrolet, Oldsmobile, Oakland, Buick and Cadillac divisions. Dealers' sales to users in September increased 4,974.



Winner of 1925 Pulitzer Trophy, Mitchel Field, L. I.

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.*

NEW YORK, Oct. 14—Last week's trade reports were generally favorable. Commodity prices in general declined sharply, while stock quotations moved irregularly.

CROP REPORTS

The official crop report based on condition October 1 forecasts a corn crop of 2,918,000,000 bushels, as compared with a previous estimate of 2,885,000,000 bushels and last year's harvest of 2,436,513,000 bushels. The total wheat crop is placed at 697,000,000 bushels, nearly the same as a month earlier, as against a yield of 873,000,000 bushels last year. The cotton crop estimate of 14,759,000 bales is 828,000 bales larger than the forecast a fortnight ago, and compares with last year's crop of 13,627,936 bales.

IRON AND STEEL

The production of pig iron last month amounted to 2,726,198 tons, and averaged 90,873 tons a day, as against a daily average of 87,241 tons in August and 68,442 in September last year. Steel ingot output totaled 3,492,904 tons, averaging 134,342 tons daily, as compared with 131,694 tons in the preceding month and 108,755 a year earlier. Unfilled orders on the books of the United States Steel Corporation at the end of the month amounted to 3,717,297 tons, showing a gain of 204,494 tons during the month.

CAR LOADINGS

Car loadings in the week ended September 26 numbered 1,120,645, compared with 1,098,428 in the preceding week, and 1,087,954 in the corresponding period last year.

FISHER'S INDEX

Fisher's index of wholesale commodity prices stood at 156.1 last week, the lowest figure since May. Dun's index declined about ½ of 1 per cent in September, while Bradstreet's index advanced by about the same percentage.

FEDERAL RESERVE STATEMENT

Bills and securities held by the Federal Reserve banks increased $8,100,000 during the week ended October 7, with gains of $10,800,000 in discounts and $15,600,000 in open market purchases partially offset by a decline of $18,800,000 in Government securities. Note circulation increased $16,000,000, and deposits $15,100,000, while reserves decreased $3,100,000. The reserve ratio declined from 72.5 to 71.8 per cent.

MONEY

Call loan rates remained firm last week, ranging from 4½ to 5½ per cent. Time loan and commercial paper rates were higher at 4½ to 5 per cent and 4½ to 4¾ per cent, respectively.

Employment Shows September Increase

Skeletonized Reports to U. S. Employment Service Indicate Upward Trend

WASHINGTON, Oct. 15.—Further increase in employment at automotive manufacturing plants is noted by the U. S. Employment Service in its October bulletin covering September conditions. Following are skeletonized reports from various automotive centers:

Michigan: There is a shortage of help in the automobile industries. Employment in the automobile and accessory plants is 100 per cent and it is expected this condition will last for some time.

Detroit: A few automobile plants are working overtime.

Grand Rapids: Automobile and accessory plants are operating overtime.

New York, general: Employment in the automobile and accessory lines remains at a fairly high level.

New York City: Automobile accessory plants and repair shops are extremely busy and are in need of mechanics.

Rochester: Automobile accessory plants are continuing operations at a high pace and employment conditions in this line are satisfactory.

Wisconsin, general: Increased employment is reported in the automobile accessory line.

Toledo, Ohio: Automotive plants are operating overtime.

Auto-Lite Co. Will Concentrate Plant

TOLEDO, Oct. 14—Concentration of all manufacturing departments of the Electric Auto-Lite Co. at Toledo and Fostoria, means the virtual abandonment of activities of the company at Poughkeepsie, N. Y.

Enlargement of the main plant at Toledo may be required to accommodate the new business brought here. At Fostoria, the harness department has been moved to an up-town building owned by the company and formerly used as a warehouse for Allen cars.

DeJon products will be manufactured in the Toledo plant in the future.

Officials of the plant here declared that business was going along at a rate which indicated a good volume for the coming year. This will be the company's greatest year to date.

Chevrolet Co. Sponsors New Bus on Truck Body

DETROIT, Oct. 13—Production of a bus on the regular 1-ton Chevrolet truck chassis is being sponsored by the Chevrolet Motor Car Co. and the Detroit retail store of the company. The bus sells for around $1,200.

According to A. H. Goodman, manager of the Detroit retail store of the company, the bus, which will seat 28 persons, uses bodies manufactured either by the Martin-Parry Corp. or by Wayne. It is planned to sell buses to schools in rural districts and also bus lines serving as feeders to electric railways. The annual production is estimated to be around 20,000, with the output evenly divided over the whole year. Thirty by five-inch tires are used all around, the other specifications being the same as those of the regular Chevrolet 1-ton truck.

WILLS STE. CLAIRE ADDS MODELS

Marysville, Mich., Oct. 15—Wills Sainte Claire, Inc., has added cabriolet roadster and Gray Goose Traveler models, listing at $3,785 and $3,300 respectively, to its eight-cylinder, de luxe line, and a cabriolet roadster at $3,285 to its six-cylinder, standard models. In addition, list prices on standard roadster and the Gray Goose Traveler models of the six-cylinder line have been increased $315 to $2,800 and the eight-cylinder de luxe roadster also has been raised from $3,185 to $3,300.

The three models affected by the price increases now are furnished with front and rear bumpers, and spare tire, in addition to the equipment formerly carried by them.

Cabriolet roadster and Gray Goose Traveler models have been eliminated from the standard eight-cylinder line.

The new six-cylinder cabriolet roadster is finished in lacquer with leather upholstery and is equipped with five disk wheels, shock absorber, automatic windshield wiper, sun visor, cowl ventilator, rear-view mirror, dash gasoline gage, cigar lighter, clock and locks for ignition, transmission, spare tire and doors.

Besides the equipment supplied on the cabriolet and Gray Goose Traveler when these models were included in the eight-cylinder standard line, the former now has sun visor and door lock and the latter front and rear bumpers and sun visor.

Mohawk Rubber Co. in Annual Meeting

AKRON, Oct. 15—More than 200 of the larger distributors of Mohawk tires and 60 members of the sales force and branch organizations attended the annual sales conference of the Mohawk Rubber Co. here Oct. 6 to 9. President S. S. Miller said it was the most successful meeting of the kind ever held. J. F. Jones, Mohawk sales manager, was in charge of daily conferences. Company officials who addressed the visitors, predicted another record-breaking tire business in 1926.

Olds Works Plan More Equipment

Additions Needed to Enable Doubling Rate of Production

LANSING, MICH., Oct. 16—Olds Motor Works has ordered additional equipment which will enable Oldsmobile production to be doubled in order to fill the output schedule for 1926, which is expected to be the largest year in the company's twenty-eight years' history.

Additional ovens will also be installed in the plant of the Fisher Body Corp, which adjoins Olds Motor Works and builds bodies for Oldsmobile exclusively. All ovens are now being worked 24 hours a day, and even at this peak the plant is hard pressed to keep pace with orders.

In September 5,541 Oldsmobiles were produced and sold by the factory and officials say that dealers have not been able to build up reserve stocks because of the demand for Series D cars, introduced in August. This average of about 250 cars per day is very nearly the limit of existing facilities.

I. J. Reuter, president and general manager, says production will be raised to between 400 and 500 cars per day by January. Closed body commitments placed with Fisher call for 11,000 closed jobs in January and February. He adds that sales have shown a marked gain in the last six months, despite curtailing of production in July and the first few days of August, due to introduction of the new series D. Export business is more than double what it was last year at this time.

General Tire & Rubber Predicts 50% Increase

KRON, O., Oct.. 15 — The General Tire & Rubber Co. will depend on their dealers selling $25,000,000 worth of tires in 1926, or nearly 50 per cent more than this year. This was the statement of President William O'Neil and other executives, who spoke at distributor meetings in Atlanta, Oct. 8 and 9, and Atlantic City, Oct. 1 and 2. The company will continue its policy, said Mr. O'Neil, of accepting no original equipment business from motor car manufacturers. All tires are to be sold through exclusive distributors in each town, as heretofore.

Buick to Continue Present Output Rate

FLINT, MICH., Oct. 15—Buick will continue its present rate of output of 22,000 cars a month, or 1,000 daily, during October and November, E. T. Strong, general sales manager, said today. From this statement it is likely that, if the present demand continues, December production also will be near capacity.

Mr. Strong said that the demand still exceeds the output.

N.A.F.C. Announces Convention Plans

Special Report to be Made On Automobile Financing Problems

CHICAGO, Oct. 15—Two days, November 16 and 17, were set as the dates for the annual convention of the National Association of Finance Companies at a meeting of the executive committee here this week. The convention will be held at the Sherman Hotel, Chicago. A committee to arrange a program was appointed, as follows: A. H. Rosenberg, Motor Car Securities Co.; B. A. McDonald, Commercial Credit Trust; F. A. McGary, Mercantile Acceptance Corp.; J. R. McNamara, Walter E. Heller Co.; E. L. Price, Manufacturers Finance Trust, and C. C. Hanch, general manager of the association.

This committee was instructed to arrange a program which is expected to be a complete discussion of the automobile financing problem from the various standpoints of manufacturer, distributor, dealer, banker, insurance company and finance company.

Questionnaire Sent Out

A feature will be a report of the investigation by Mr. Hanch into the experience of the finance companies with credits based on varying down-payments and terms of repayment, especially from the standpoint of repossessions and losses. To gather material for this report, questionnaires were sent to all known finance companies, whether members of the association or not, and already more than a hundred returns have been filed. Mr. Hanch is hopeful that at least as many more companies will fill out and return the questionnaire so that the final analysis will more accurately represent the experience of the industry.

Invitations to attend the convention will be extended to all finance companies, bankers and representatives of the motor vehicle industry.

A matter of business for the convention will be the election of eight directors.

Phillips Defends Insurance Methods

NEW YORK, Oct. 15—Jesse S. Phillips, former New York State Superintendent of Insurance and now general manager and counsel of the National Bureau of Casualty and Surety Underwriters, has issued a reply to a warning recently sent out by the American Automobile Association, urging motorists carrying liability insurance to examine their policies to determine whether or not they are really insured and that the company undertakes to pay judgments in all cases of accident.

The Association warning says that in certain cases motorists may be buying merely protection against loss, not necessarily against liability, as some insurance companies are said to refuse to pay judgments unless the policy holder first pays the judgment himself.

Phillips says that all public liability policies issued by members of the National Bureau, covering about 75 per cent of the class of insurance referred to by the A. A. A., stipulate that the insolvency or bankruptcy of the assured will not release the company from paying damages for injuries or loss. He adds that, if the motorist is unable to meet a judgment against him, under the bankruptcy clause, he may recover from the company, and if he can pay, the company does not ask him to pay but goes directly to him and makes good the loss.

KISSEL MOTOR CAR CO. ANNOUNCES CUTS

Hartford, Wis., Oct. 12—The Kissel Motor Car Co. has made a $100 reduction in the prices on its six and eight-cylinder, five-passenger broughams, these models now listing at $1,695 and $2,095 respectively. Sales of Kissel cars in the first nine months of the current year are reported to be more than three times as large as in the corresponding period of 1924.

Congress May Act on Rubber Growing

AKRON, Oct. 15—Congress may act this Fall to remove the bars against crude rubber growing in the Philippines, F. A. Seiberling, pioneer rubber manufacturer and head of the Seiberling Rubber Co., said today, when asked if the island rubber problem is any nearer a solution.

A rubber industry can never be established in the Philippines, he points out, until the restrictions against contract labor is suspended for at least ten years. Use of Chinese coolies would enable planters there to compete successfully with British rubber plantations in the Far East, which are operated with cheap native labor.

"There is no better soil nor more ideal climate for growing rubber than in the Philippines," said Mr. Seiberling. "The question now is purely one of law."

Another handicap to American activities in the Philippines—the restriction against planting large acreages—is expected to be removed by island legislators.

Plans for bringing the Philippine situation before Congress probably will be discussed at a directors' meeting of the Rubber Association of America this month.

Champion Expects Record

TOLEDO, OHIO, Oct. 14—Company officials announce that Champion Spark Plug Co. will produce 40,000,000 plugs this year, a new record for the company.

British Fight for More Rubber Grows

Manufacturers Now Urging Stevenson Act Be Abolished

NEW YORK, Oct. 15—An increasing demand by British rubber manufacturers and the British motor car industry generally, for abolition of the Stevenson Act restricting rubber production, is pointed out here by representatives of the American rubber industry.

Such prominent British rubber manufacturers as Sir George Beharrell, D. S. O., M. Inst. T., managing director of Dunlop Rubber Co., Ltd., and Alexander Johnson, chairman of the India Rubber Manufacturers' Association in London, are now voicing the conviction that the Stevenson Act has served its purpose and should now be withdrawn.

Desire Restrictions Removed

A deputation representing British rubber manufacturers and the motor car industry recently requested their Government to abolish the restrictions as a serious detriment to British trade. The act was also described as having an adverse effect on the British unemployment situation.

Sir George Beharrell points out that with consumption of rubber 30 per cent higher this year than it was two years ago, further restrictions of production under the act are certain; but he finds it difficult to see any justification for further restrictions with crude rubber selling at least three times as high as is necessary to give the grower a reasonable profit. He adds that artificial conditions which cause wild speculation are harmful to the industry all around, making it impossible to restore sound trading conditions until the restrictions causing the artificial situation are removed.

The British are also beginning to realize that plans of Americans to produce more of their own rubber, plans directly attributable to the Stevenson restrictions, may eventually cut into British production. Sir George points out that, while restriction remains, there is no inducement to plant further areas in British territories, so that there is grave danger that the British will still further recede from their position as the premier rubber producing country of the world

The protest by the rubber and motor car industry representatives is now before the British Secretary of State.

RICKENBACKER CAPITAL

DETROIT, Oct. 7—Purchase of a minority interest in Rickenbacker Motor Car Co. by Noyes & Jackson, it is said, will furnish between $1,500,000 and $2,000,000 additional working capital for use in increasing output. The company has facilities for producing 30,000 cars annually and production for this year is expected to exceed 12,000, since shipments for the first half were 6,100.

Automotive Demand Aids Steel Market

Prices Steady—Sheet Situation Mixed—Pig Iron Market Shows Dullness

NEW YORK, Oct. 15.—A fair volume of automotive demand continues to be one of the steel market's gratifying features. Buying, however, is strictly confined to requirements called for by the current month's operating schedules. Steadiness characterizes the price situation with reference to most of the descriptions of finished steel used in the automotive industries. Strip steel, cold-finished steel bars, and alloy steels are holding their own. The sheet situation, however, is somewhat mixed. Black sheets are admitted to be the most feeble item in the list, while full-finished automobile sheets rule firm, and producers predict that before long a readjustment of full-finished automobile sheet prices on a somewhat higher level will be absolutely unavoidable.

Market "In Perfect Balance"

For the descriptions of steel in which the automotive industries are chiefly interested, the market is spoken of as being "in perfect balance." This means that much as some producers would like to advance prices on certain products which yield only a scant margin of profit at prevailing levels, they are restrained from doing so by continuingly keen competition, and that consumers find it more to their advantage to buy from hand to mouth than to attempt to drive prices down by committing themselves for heavy tonnages for future delivery.

Pig Iron Market Dull

Pig Iron—Dullness is the market's outstanding feature. Slightly more activity is noted in the Connellsville coke market, but on the whole the effect of the anthracite coal strike on the pig iron market is so far rather negligible.

Aluminum—While the market for virgin aluminum ingots and sheets remains pegged at unaltered levels, famine prices are being paid for secondary metal. Remelted metal is in great demand, and the supply of scrap exceedingly light. World prices for aluminum continue high. Recent German advices quoted 230 marks per 100 kilos, the quivalent of 24c. London quotes £118 per ton, the equivalent of 25c. Smaller German sheet rollers are being driven out of business by the too narrow spread between ingots and sheets.

Copper—Liberal shipments of copper and brass products against contracts are being ordered forward by automotive consumers. A moderate amount of new orders is being placed. The copper market is narrow.

Tin—The Far East is apparently withholding supplies from the market as a prop to the abnormally high prices which prevail. For all that, Americans continue to be active buyers.

Lead—Demand continues fairly heavy, storage battery manufacturers figuring prominently among the buyers. The supply is none too abundant.

Zinc—The visible supply fell off approximately 5,000 tons in September, and the market rules strong in consequence.

Peerless Figures Show 90% Increase

CLEVELAND, Oct. 15—Indicative of the enviable position some of the automobile companies are in is the latest report from the Peerless Motor Car Co.

September sales were 90 per cent greater than sales for the same month last year, and the outlook for October sales indicates an even greater increase for this month.

Charles A. Tucker, sales manager of Peerless, says that the future has never looked brighter. New distributors have been added in many parts of the country and two of Florida's leading automobile dealers are closing with Peerless at present.

Supreme Court Rules on Bus Regulation

WASHINGTON, Oct. 15—Bus companies, doing an inter-state business, must secure the approval of and are subject to the rules and regulations of the several states' Public Service Commissions, according to a decision of the Supreme Court.

Word to this effect was given this week to the Intercity Transit Co., seeking application to operate buses between Chambersburg, Pa., and Martinsburg, W. Va., via Hagerstown, Md. Opposition to the proposed line will be offered by the Pennsylvania Railroad, but it is expected that, notwithstanding this opposition, the charter will be granted.

Similar opposition was voiced by the Washington Electric Railway Co. against a bus line that paralleled several of its urban lines running out of the District but only this week the Maryland Commission granted permits to operate eight such bus lines.

LABORATORY GARAGE

SPRINGFIELD, ILL., Oct. 15—Construction has been started on a new garage and service building which is to be used for laboratory and test purposes by the Weaver Manufacturing Co., makers of garage and shop equipment. The building is to be of brick and steel construction, with a frontage of 125 ft., and will be completed about January 1, 1926.

One of the major considerations in erecting this building is to enable the experimental and engineering departments to keep in close touch with new developments, test Weaver products in every-day use and develop new items. The garage is to be operated on the same self-supporting basis as any other service station.

Congress Sets Time Tax Hearing Limit

N. A. C. C. and A. A. A. Allowed One Hour to Present Argument for Repeal

WASHINGTON, Oct. 15.—Only one hour will be allotted representatives of the National Automobile Chamber of Commerce and the American Automobile Association on Oct. 24 to convince the House Ways and Means Committee that war excise tax on automobiles, accessories and parts should be repealed. Each of the two organizations will be given half an hour.

While it is admitted that this is a ridiculously short period to present arguments involving an assessment on the industry of approximately $141,000,000, members of the House committee point out that so many interests are to be heard it is necessary to limit severely the time each is to consume.

It is expected that all of the automotive leaders, representing every branch of the industry, who met here several weeks ago in anticipation of the tax hearings, will be present on October 24 and ready to testify.

Pyroxylin Lacquers' Production Up 125%

WASHINGTON, Oct. 14—A gain of 125.9 per cent in the production of pyroxylin varnishes or lacquers was registered in the first six months of 1925, as compared with the last half of 1924, the Department of Commerce announces in its semi-annual survey of the paint and varnish industry. Other comparisons for the same periods show a gain of 3.1 per cent for paste paints; 31.5 per cent for ready-mixed and semi-paste paints, and 13.6 per cent for varnishes, japans and lacquers, other than pyroxylin.

The increase noted for pyroxylin products was apparently the result of the greater use of these finishes in the automotive industry. The statistics are based upon returns from 502 establishments, of which 67 produce pyroxylin varnishes or lacquers.

WATER SHIPMENT OF FORDS

PORTLAND, ORE., Oct. 14—On her first trip up the Columbia River to this city, the "Onandaga," Henry Ford's ship, is loaded with "knocked down" Fords. This is the first water shipment to this city of Ford cars, but will doubtless be followed by numerous others.

WASHINGTON AUTOMOBILE SHOW

WASHINGTON, Oct. 15—The Washington Automobile Show will be held on two floors of the new Washington Auditorium building from Jan. 30 to Feb. 6, inclusive. The show is held by the Association, with Rudolph Jose as manager.

New Six-Cylinder Star is Announced

Three Body Types Available. Engine Has 2¾ in. Bore and 4¾ in. Stroke

NEW YORK, Oct. 14.—Durant Motors, Inc., announces the addition of a six-cylinder model to its line. The new chassis is to be fitted with three body types, a coach, a coupster and a coupe.

The engine is of the L-head type with a bore of 2¾ in. and a stroke of 4¾ in., and is claimed to develop 40 h.p. on the brake. Full force feed lubrication is employed and the front end drive is by silent chain. Six cross members give exceptional rigidity to the frame, and the kick-up feature of the latter permits of a comparatively low center of gravity and a low-hung body.

All bodies are by the Hayes-Hunt Corp. and are lacquer-finished in black and sagebrush green. The radiator shell is nickeled, while the fenders are enameled in black. The windshield is of the one-piece, full-ventilating type. A cowl ventilator and two overhead visor ventilators are provided. The standard equipment includes an automatic windshield wiper, a rear mirror and cowl lights. In the coach, to give ready access to the rear seat, the right-hand forward seat is so made as to fold toward the driver's seat. The body is said to be quite roomy.

Prices Not Yet Fixed

Prices on the six-cylinder models will be made public within about ten days, and it is understood that they will range between $800 and $1,000. About 500 of the new models will be ready for shipment to zone offices early next week, and shipments to distributors and dealers will follow soon after.

The engine is a Continental and is similar in design to the four-cylinder model. One change consists in locating the oil pump inside the oil pan, instead of above it, a screen being placed over the suction pipe in order to keep out sludge. Cylinders and crankcase are cast in a single block, but the cylinder head is a separate casting. The water pump is located near the rear end of the engine and the water enters the jacket at the rear cylinder, which would ordinarily be hottest, on account of being less exposed to the cooling blast of the fan.

Valves are of unequal size, the intakes being 1⅜ in. in diameter and the exhausts 1¼ in., but both sets have a lift of 5/16 in. The crankshaft is supported in four main bearings, the dimensions of these bearings being as follows (front to rear): 2⅛ x ⅜ in., 1 13/16 x 15/16 in., 1¾ x 15/16 in. and 1 9/16 x 1 13/16 in.

There are two sets of brakes on the rear wheels, external and internal, both acting on the same drums which are 11 in. in diamaeter. All springs are semi-elliptics, the front springs being 35⅞ in. long and the rear springs 53¾ in.

The steering gear is a semi-reversible worm and gear type, provided with ball thrust bearing and means of adjustment for wear. The column is located on the left hand side and carries a wheel 16 in. in diameter. Operation of the motor-driven horn is effected by a button at the center of the steering wheel, while the spark and control levers are mounted on the steering column directly below the wheel. On the instrument board are mounted a speedometer, an ammeter, an oil gage, a choke and ignition and lighting switches. The ammeter and oil gage, a choke and ignition and lighting switches.

Axle Semi-Floating

The rear axle is of the semi-floating type and has a spiral bevel gear drive. The fuel tank, at the rear, has a capacity of 11½ gallons. It is protected by a cover of heavy sheet steel which forms a substantial brace for the frame. Fuel feed is by the vacuum system. The whole of the electrical equipment, that is, generator, starter and ignition unit, is of Autolite make. Chassis lubrication is by the Alemite system.

The wheelbase of the Six is 107 in. and the tread the standard 56 in.

Traffic Relief in Plans of Philadelphia Lines

PHILADELPHIA, Oct. 15—An unusual expedient to relieve traffic congestion has been taken by the Philadelphia Rapid Transit Co. in establishing parking areas at convenient points on its lines. Parking tickets are issued at 25 cents, which includes round trip fare on the lines of the company, reducing the parking charge to 10 cents.

The two areas are at points convenient to motorists from outlying communities, who will be enabled to leave their cars all day and continue their trips to the central part of the city by elevated train. In the downtown section of Philadelphia congestion is so bad that parking is virtually impossible.

Detroit Companies Plan Export Fleet

Hudson, Dodge, Chrysler and Hupp Negotiate With Shipping Board for Boats

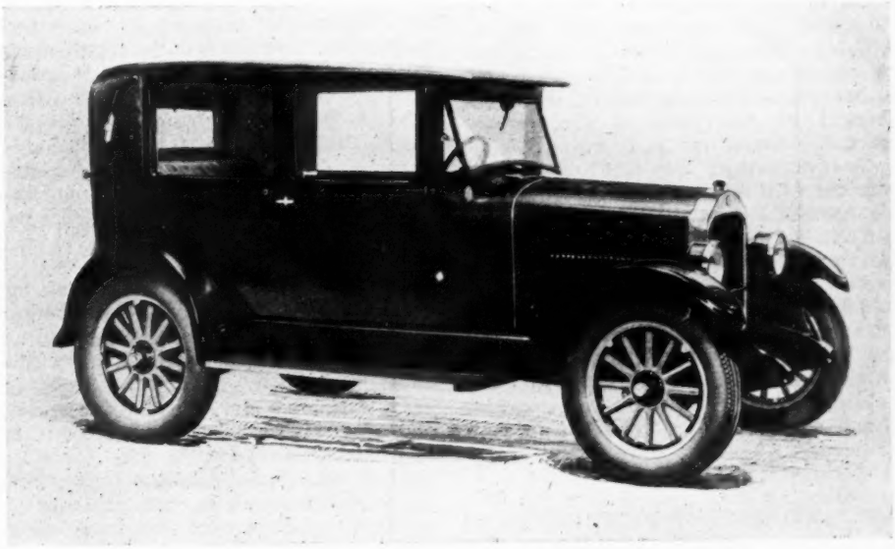
WASHINGTON, Oct. 15.—Negotiations looking to the purchase of a fleet of fifteen or twenty Government ships for use in exporting automobiles from Detroit to European and other foreign ports have been initiated here by representatives of four important Detroit automobile concerns, it is admitted by the Shipping Board. The Hudson, Dodge, Chrysler and Hupp are understood to be the interests behind the plan.

While the Shipping Board describes the deal as only "in the making," it is learned that automotive men involved have already gone so far as to consult the Department of Commerce as to trade routes and foreign markets. It is further understood that the advice of J. Walter Drake, Assistant Secretary of Commerce, and that of a Detroit automobile man has been sought.

Consummation of the plans would involve upward of $1,000,000 in outlay for Government tonnage. The vessels under consideration are the 4,200-dead-weight-ton, type oil-burning steamers. The Shipping Board price is $50,000.

The tentative plan of the automobile companies is to route the ships through the Great Lakes to Montreal and then to European ports, southward to South America, or through the Panama Canal.

Combination of the automotive concerns in this project is inspired by their desire to reduce transportation costs and increase shipping facilities to the point where the prices for American automobiles, delivered abroad, could be substantially lowered, enabling sales to expand, despite foreign competition and the high tariff barriers in some countries.



New Six-Cylinder Star Announced by Durant Motors, Inc.

August Automotive Exports Are Heavy

Figures Compare Favorably With Year's Best Months. Argentina First

WASHINGTON, Oct. 14—Automotive products valued at $31,243,310 were exported from the United States and Canada in August, of which the United States accounted for $29,224,681, according to the Automotive Division of the Department of Commerce. Total American automotive exports in reaching this high figure compare favorably with corresponding shipments in March, April and May, when figures of more than $35,000,000 were reached in each month. In June and July shipments amounted to approximately $29,000,000 and $25,000,000, respectively. The improved August figure seems to reflect the start of Spring demand in automotive markets below the equator, as well as the favorable reception of new models of American cars in Northern markets.

May's High Surpassed

The United States and Canada, in shipping 37,671 passenger car and truck units in August, caused the previous high mark of 35,624, which was made in May of this year, to be passed by a considerable margin. Of the total, passenger car exports from the United States were 26,516. In addition, truck shipments from the United States totaling 6,724 units were the largest on record for any one month. On the other hand, automobile exports from Canada contributed little to the general increase over the previous month, and were in the case of passenger cars considerably below the monthly average for the year thus far.

Argentina Leads Foreign Demand

In August, Argentina supplanted Australia as the leading foreign market for American passenger cars. This rise of Argentina was not the result of a marked falling off in exports to Australia, but rather represented a greatly enhanced demand on the part of the former market. Argentina and Australia together accounted for 8,763 passenger cars out of a total of 26,516 exported to all markets from the United States.

Notable increases were registered by Italy and Brazil in August. August exports to Italy amounted to 1,519, compared with 164 for the previous month, or a gain of 825 per cent, while those for Brazil were 400 per cent up, based on shipments of 2,214 in August and 554 in July. As a passenger car market, Brazil went from tenth position in July to third in August.

REO EXPORT BUSINESS

LANSING, MICH., Oct. 15—The Reo Motor Car Co.'s export business for September surpassed that of September, 1924, members of the sales force of the company said today. This follows the steady expansion of the sales organization throughout the world. One of the new distributors recently taken into the export organization is Haru Karita, Tokio, Japan, manager of Karita & Co. W. D. Durkin, manager of the Mexican Automobile Sales Co. of Mexico City, arrived in Lansing recently for a short visit and inspection of the plant.

Outlook Bright for Firestone Rubber

AKRON, Oct. 15—Sales of the Firestone Tire & Rubber Co. for the fiscal year ending Oct. 31 will reach a total of more than $100,000,000, it is reported, compared with $85,610,004 in 1924, and $77,583,000 in 1923.

Indications are that gross business will surpass even the boom year, 1920, when sales totaled $115,000,000. It is certain that unit volume of sales will be larger, on the basis of business in the last 11 months. Net profits of better than $10,000,000 are anticipated this year, equivalent to about $30 a share on the 3,750,000 shares of common stock outstanding. Net earnings in 1924 were $8,116,689.

At the close of last fiscal year Firestone had wiped out all bank indebtedness. A general surplus of $30,247,530.02, shown in the last annual report, has been further built up this year.

Important developments during the year included purchase of the Sanford Cotton Mills, at Fall River, Mass., now operated as a subsidiary under the name of Firestone Cotton Mills, and the beginning of negotiations for leasing 1,000,000 acres of rubber-growing land in Liberia.

Truck Standardization to be Further Studied

BUFFALO, N. Y., Oct. 15—J. R. Spraker, general manager of the Atterbury Motor Car Co. and chairman of the rating committee of Motor Truck Industries, Inc., states that he will call a meeting of the rating committee for one day in the last week of October, probably to be held in Detroit, to study the reports made by the various members on the blue-print questionnaire which Mr. Spraker recently sent to members of the committee.

The questionnaire contains a blank for filling in size data on twenty-two different points involving the standardization in each one of the four classes of trucks under study of the seat, frame, steering gear, dash openings, tires, front spring and rear spring. It is expected that this committee meeting will serve to produce out of the mass of suggestions and recommendations, material for a practical codification of standards which can be submitted at the Washington meeting of the organization in the week of November 8.

FINANCIAL NOTES

Continental Motors Corp.—At the regular meeting of directors of the corporation held Tuesday, September 29, the quarterly dividen, at the rate of 80 cents a share per annum, was declared. The dividend is payable October 30 to stockholders of record October 15. With the payment of this dividend, there will have been paid to stockholders this year $1,408,676.

In discussing business conditions Ross W. Judson, president of the company, said, "Our business has been very satisfactory in the last six months. In fact, it is much greater than we anticipated. Our present customers are increasing their regular schedules, and we have completed negotiations with several new customers who are quantity producers. We anticipate a very healthy increase in business for the next six months."

Locomobile Co. of America, Inc.—The company reports, for the first half of 1925, net loss of $5,122,050. Balance sheet shows real estate, plant and equipment, less depreciation, valued at $3,961,608; investments, $175,588; deferred charges, $917,353; cash, $243,831; notes and accounts receivable, $422,441; inventories, $1,881,564; total assets, $7,602,385. Capital stock, $9,600,000; funded debt, $1,239,800, advances, $1,039,627; contingent reserve, $120,122; accounts payable, $724,885; and net working capital, $1,822,951.

Durant Motors, Inc., Accessory Divisions.—American Plate Glass Corp., for the six months ended June 30, increased its surplus $266,739 to $3,439,154; New Process Gear Co. showed $257,219 profits; Hayes Hunt Corp., $217,421; Warner Corp., $149,201, and Adams Axle Co., $3,597.

Falls River Co.—Net sales of this company for the first nine months of the year were $2,013,173, compared with $2,516,035 during all of 1924. Earnings on common stock for the quarter ended Aug. 31 were $1.30 a share on the common stock.

Durant Motors Co. of California.—This company reports net income, for six months ended June 30, as $148,836, equal to 51 cents per share on 292,500 shares; current assets $5,317,016; surplus $368,141, and net working capital, $2,095,516.

Walker Body Co.—The balance sheet of this company, as of March 31, 1925, shows assets of $1,141,830, against $1,378,122 at the same time in 1924; surplus, $699,206, against $840,619, and net working capital, $674,358, against $925,936.

Durant Motors Co. of Michigan.—This company's net loss first half of 1925 was $587,020; assets, $6,786,534; surplus, $474,552, and net working capital, $2,038,189.

Firestone Tire & Rubber Co.—This company has declared regular quarterly dividend of $1.50 on common, payable Oct. 15 to holders recorded Oct. 1.

NEW PEERLESS COMING

CLEVELAND, Oct. 15—The Peerless Motor Car Co. will announce its new six-cylinder car on November 19. Although no details concerning it have been made public, it is understood that it will sell considerably below the present Peerless six-cylinder line.

Men of the Industry and What They Are Doing

Badger Assistant Treasurer

E. C. Badger, for several years comptroller of Nordyke & Marmon Co., has been promoted to the position of assistant treasurer, according to a recent announcement by G. M. Williams, president of the company. In his new work, Mr. Badger will assist the reasurer, C. J. Sherer.

Mr. Badger's experience with Nordyke & Marmon began during the war, when, as a representative of the Bureau of Aircraft Production of the War Department, he was in charge of accounting when Marmon was engaged in Liberty motor production. Prior to that Mr. Badger had extensive accounting and finance experience with Winchester Repeating Arms Co., and as a member of Lybrand, Ross Bros. & Montgomery, certified public accountants, of New York city.

Promotions Announced

A. W. Wharton, president of the Churchville Manufacturing and Laboratories Co., Philadelphia, the sole manufacturers of the Wharton Cushino Guard Rail, has disposed of his entire interests to the corporation.

At a meeting of the Board of Directors on October 7, V. S. Fry, who has been associated with the corporation as vice-president, was unanimously elected president.

Charles Harper Davis, who has acted as a director for the last three years, was elected vice-president, to fill the vacancy made by Mr. Fry. Joseph T. Pfister was appointed director of finances. C. J. Stover remains as secretary and treasurer.

Dall Manufactures Pistons

L. A. Dall, president of the Dall Motor Parts Co., of Cleveland, O., is again devoting all of his time to the manufacture of their line of pistons. For the last year, he has been devoting part of his time to his Detroit interests.

The Dall Motor Parts Co. contemplates a considerable expansion in their line, it is said.

Rose Resigns

John A. Rose, Kenosha, Wis., has resigned the position of assistant manager of the John N. Willys Export Corp. Mr. Rose was formerly export manager of the Nash Motors Co.

Company Changes Name

MILWAUKEE, Sept. 16—Change in name of the M. B. M. Manufacturing Co. of Milwaukee to the Red E. Manufacturing Co. has been effected through amendment to articles of incorporation of the concern which manufactures and deals in auto and tractor engines and gas engines of various kinds.

WHITE CO. ANNOUNCES PROMOTIONS MADE

New direct factory branches of The White Co., Cleveland, have been established at Detroit and Los Angeles for selling and servicing of White motor trucks and buses, replacing the dealer plan of representation in both cities.

J. C. Compton, former manager of the northwestern district at Minneapolis, has been appointed district manager at Detroit, and J. L. Sydnor, former district manager at San Francisco, is district manager at Los Angeles.

The former central district has been divided into four new districts to be known as Cleveland, Detroit, Cincinnati and Indianapolis. Branch Managers A. L. Hayes, Cleveland; J. C. Rush, Cincinnati, and F. W. Balser, Indianapolis, are promoted to district managerships. A. P. Dorrance becomes manager of the Northwestern district, succeeding Compton. P. E. Letsinger, former retail sales manager at Seattle, succeeds Sydnor as San Francisco district manager. J. F. Williams, Seattle salesman, succeeds Letsinger. Gene Etzler, Seattle service manager, has been made district manager at Los Angeles, the Seattle vacancy being filled by W. F. Beeson, former Salt Lake City service manager.

Carpenter and Champion Sail

R. E. Carpenter, vice-president of Manufacturing Corp., has sailed for Europe on the "Berengaria" for a six weeks' business trip, during which he will visit the Olympia automobile show in London.

Albert Champion, president of A. C. Spark Plug Co., who also sailed on the "Berengaria," said his concern was now producing 100,000 spark plugs per day. He will also visit the London show, as well as his plants in Paris, France, and Birmingham, England.

Moves Into New Building

LITTLETON, COLO., Oct. 6—The Coleman Motors Corp. has just moved into its new factory building here. The building is of pressed brick, thoroughly modern and fireproof, with outside dimensions of 250 x 100 feet. A force of forty men is employed, making the Coleman four-wheel drive trucks in three sizes, 1½, 2½, and 5-ton capacities. Beauty motors, Fuller transmissions, Goodyear tires, and Wise axles are used, all other parts being manufactured on the ground.

Harder and Scott Promoted

Word has been received from Oakland, Cal., of the appointment of Del Harder as factory manager of the Durant Motor Co. of California, succeeding George R. Scott, recently made assistant general manager in charge of production at the Flint Motor Co. plant, Flint, Mich. Harder has been associated with Scott since the beginning of the production of Star cars. Another promotion announced at the same time is that of Miles Fox to be superintendent of the Oakland plant of the Durant organization.

Mulch to the Coast

R. H. Mulch, vice-president and general manager of the Flint Motor Co., has left for a trip to the Pacific Coast. He will visit Los Angeles, Oakland, Seattle, Denver, and other cities before his return to the home office.

He is making this trip to study business conditions, and, after his return from the West, he will cover the Eastern territory in the same fashion.

In this way he will be able to obtain a complete picture of the whole country before the opening of the New York Show in January.

Carter Factory Manager

J. J. Carter has been appointed factory manager of the Olds Motor Works, I. J. Reuter, president and general manager, has announced. Mr. Carter, previous to his appointment, had been assistant factory manager. He came to Olds from the Remy Electric Co., where, during his thirteen years with that company, he had been superintendent of the tool room, master mechanic and manufacturing engineer.

Shaffer Changes Position

C. H. Shaffer, former assistant works manager of American Steel Foundries Co., Alliance, Ohio, has resigned to become general manager of Superior Steel Castings Co., Benton Harbor, Mich.

Pilliod Resigns

C. J. Pilliod of the Cleveland Piston & Bolt Co., has resigned as a manufacturing member of the board of directors of the National Standard Parts Association, and his place has been taken by W. M. Albaugh, of the Thompson Products, Inc., it is announced by C. B. Fraser, secretary of the association.

Officials Inspect Plant

The river road plant of the Dunlop Tire and Rubber Co. of America, Buffalo, the largest of the Dunlop producing units, was recently inspected by H. Mac Kirdy, managing director, and F. C. Bateman, production superintendent, of Dunlop Rubber, Ltd. (Australasia).

New Radial Aircraft Engine Developed

Rickenbacker's Object is to Reduce Costs of Complete Carrier

NEW YORK, Oct. 12.—A five-cylinder radial aircraft engine, developing from 60 to 80 h.p. has been developed by Eddie Rickenbacker, America's premier ace, and manufacturer of the Rickenbacker cars, and has been on exhibition at Mitchel Field during the National Air Races, held Oct. 8-10. Built to supply a growing demand for a reliable engine of low horse-power, the engine has not been designed to develop a high mean effective brake pressure or to be unusually light. While weighing less than 175 lbs., stress has been laid chiefly on obtaining simplicity of design and durability, ease of maintenance and low initial cost. Cylinders are of cast iron, with the individually cast cooling fins, which are of the circumferential type, mounted with their axes inclined to that of the cylinders in order to obtain maximum cooling. Valves are operated by adjustable push rods from a single ring with three cams which operates both the five exhaust and the five intake valves.

As the crankcase has been so designed as to enable the assembly of the crankshaft and articulated connecting rods before insertion in the crankcase, considerable time can be saved in the assembly of the engine. The crankshaft itself has a single throw, is provided with a counterbalance on each arm, and is supported on two ball-bearings, the forward bearing taking the thrust of the propeller.

Both the crankcase and the gear case, which is attached at the rear of the main crankcase, are aluminum. The gear case has two mounting flanges for the two five-cylinder magnetos which supply the current to the two spark plugs on each cylinder. A single oil pump provides oil-pressure up to 100 lbs. for the connecting rod and gear-case bearings, and also scavenges the crankcase, returning the excess oil to an outside tank. The crankshaft ball bearings, wristpins and pistons are lubricated by spray from the bearings and moving parts. A single carburetor is mounted below the crankshaft.

Sparks-Withington Plans Annual Party

JACKSON, MICH., Oct. 12—The Fifth Annual Sparton Party given by the Sparks-Withington Co. will be held here November 7. Guests will be taken through the Sparton factory and afterward to Lansing to a football game between Michigan State College and Toledo University. They will be brought back to Jackson in time for dinner, and will be taken by special train that night to Chicago to attend the Autmotive Equipment Convention and Show.

Big Store to Sell New Ford Planes

First Machine Was Placed on Display at Wanamaker New York Store Monday

NEW YORK, Oct. 15—Ford airplanes were put on sale here by the John Wanamaker store as regular merchandise Monday. Just as, twenty-one years ago, the same store was the first to handle Ford cars, so now it is first in the airplane field. The first plane for the store, the JW-1, left the Ford Airport at Dearborn, Mich., in time for the recent air races stopped in Cleveland for refueling, and proceeded on the last leg of its journey. The pilot was Leroy Manning, one of the regular Ford aviators. It was loaded with an unassembled Ford truck and merchandise for the Wanamaker store.

The plane is the all-metal monoplane made by the Stout Metal Airplane Co., a division of the Ford Motor Co., and is identical with the plane which made the best showing in the Edsel Ford reliability test recently. It has a wingspread of 58 ft. 4 in., and is equipped with a 400 h. p. Liberty engine. It is retailed at $25,000.

An innovation in department store service will be the use of two of the Ford planes for express duty between the New York and Philadelphia Wanamaker stores.

Developments of the Week in Leading Motor Stocks

NEW YORK, Oct. 14.—Under the leadership of General Motors, stocks identified with the automotive industry have been strong and active. In the financial district, there have been glowing reports of anticipated earnings, consolidations and extra dividends.

Less has been heard of credit restriction, although it seems probable that the discrimination exercised by the banks has been effective in checking the wild fluctuations in some of the more volative issues. The speculative element, apparently, has lost its fear, for the moment, of any advance of the rediscount rate by the local Federal Reserve Bank. It should not be assumed that such action has definitely been abandoned. It seems quite likely that raising the rediscount rate may be postponed until the seasonal pressure against sterling exchange has passed. When this pressure relaxes, it may be that the Federal Reserve will deem it best to raise the rediscount rate, if the demands of commerce and industry for credit necessitate the further liquidation of speculative loans.

It will be remembered that last month directors of the General Motors Corp. authorized payment of an extra dividend of $1 per share. Since that time rumors have been rife that the directors at the December meeting would declare an extra dividend, the amount varying, according to the optimism of the prophet, from $1 to $4 per share. The latter figure was given considerable credence in usually well-informed circles during the week.

Fisher Body, which has followed the advance in General Motors at a stately distance, also sold at a new high level this week. There has been neither official confirmation nor denial of earlier reports that this stock would be exchanged for Genral Motors, on a share for share basis, but the price has maintained a level of from 10 to 12 points below that of General Motors throughout the advance, and this has raised the question of just what the basis of exchange may be.

Among the lower priced issues, Dodge Brothers continued active and strong but without special news developments accompanying the advance in price. Willys-Overland advanced on the estimate by President Willys that earnings for the third quarter would approximate $3,500,000, and total net profit for the year would be about $17,000,000, before Federal taxes. Studebaker advanced to a new high level on reports of buying by banking interests in anticipation of a merger with Willys-Overland. Studebaker is expected to show close to $8 per share on the 1,875,000 shares of common stock outstanding for the nine months. Packard and Paige-Detroit were other strong features in this group.

Considerable interest attended the announcement of the plan of the Nash Motors Company to call for redemption all of the preferred stock outstanding at $105 and accrued dividends on February 1, 1926. A special meeting of stockholders will be held October 27 to authorize this action. This is taken to foreshadow a readjustment of the capital structure and the financial district is convinced that, following the retirement of the preferred, a split-up of common stock on the basis of at least five shares of new stock for each share of old, will be ordered.

Among the accessory stocks, strength in Hayes Wheel followed a report that directors are about to authorize the retirement of the outstanding first mortgage gold bonds, leaving the company free of all funded debt. Stewart-Warner was active on reiteration of reports of an increase and possible extra payment at the next meeting of directors for dividend action. The rubber stocks were strong, largely in response to a higher crude rubber market at London. —H. H. S.

Sees Trunk Lines for Motor Trucks

Church Says Such Specially Built Roads Will Come in Ten Years

NEW YORK, Oct. 14—Major Elihu Church, transportation engineer of the Port of New York Authority, believes that within ten years trunk line motor highways for trucks will be built between important cities by private corporations, with grade crossings and heavy grades eliminated, and run as toll roads.

"Over these specially constructed roads," he told the American Association of Port authorities, in session here recently, "we shall see fast tractors hauling long trains of trailers, controlled by air brakes on the tractors. These trunk lines will go around cities, with trailers dropped off to be handled by smaller tractors, possibly on belt lines. These tractors will be a high-speed type, not yet developed, but which can be developed."

Major Church disagreed with the opinion of railroad men that motor trucks were valuable for short hauls around terminals, but had no field in competition with railroads on long hauls. He said that traffic congestions in cities made motor trucks too expensive for general use, but he held that there were unlimited possibilities for the use of motor trucks between cities on special highways.

October Meeting of A. S. A. in New York

NEW YORK, Oct. 14—Parts department merchandising and management were the principal topics of discussion at the October meeting of the Automotive Service Association of New York. Among the speakers were D. C. Kelly, manager of the parts department in the New York Packard branch, and E. A. Gelein, of the Warren-Nash Motor Corp., local Nash distributor.

Motion pictures of the flow of oil in plain bearings taken by the Massachusetts Institute of Technology for the Standard Oil Co. of Indiana also were shown.

Management Week to be Observed in Chicago

CHICAGO, Oct. 15—The fourth National observance of Management Week will be held October 19-24, it is announced by Herbert Hoover, secretary of commerce, honorary chairman. The observance of the week in Chicago will be arranged under the joint direction of the following:

Illinois Manufacturers' Association, Chicago Association of Commerce Advertising Council, American Society of Mechanical Engineers, Western Society of Engineers, The Society of Industrial Engineers, National Association of Cost Accountants, Industrial Relations Association of Chicago, Chicago Sales Managers' Association, American Management Association, Taylor Society and Executives' Club.

One of the principal speakers during the observance here will be Edward S. Jordan, president of the Jordan Motor Car Co., Cleveland, who will speak at the banquet in the Hotel Sherman October 23 on "Who Gets the Money for Motor Cars?"

Nash Production Up 83 Per Cent

KENOSHA, WIS., Oct. 14—The Nash Motors Co., here, in closing its books for September, reports a volume of business greater by 83 per cent than that of September, 1924.

"The last month," says E. H. McCarty, general sales manager, "was the thirteenth consecutive month to show a substantially material gain over the corresponding period of the previous year.

"The number of cars shipped in September was 10,314. This is but 361 cars less than the August total of 10,675—and August rolled up the biggest monthly volume in all Nash history. September, however, having one less working day than August, actually established itself as the period of greatest daily production since our company was founded.

"During August and September there were produced and sold 20,989 Nash cars. This constituted more than 39 per cent of our entire business for the year of 1924."

City Buses Ruled Out by New York Court

ALBANY, N. Y., Oct. 14—The Court of Appeals has ruled that the City of New York has not the right to carry on the business of a common carrier of passengers. This decision voids the four bus bills passed by the New York Municipal Assembly on the insistence of Controller Craig, who introduced the bills to prevent Mayor Hylan from issuing short-term franchises to bus operators now operating lines without legal authority. It is believed that the Board of Estimate of New York City will now proceed with the award of these franchises, for which more than 80 applications have been made.

LOUISVILLE CAR SALES

LOUISVILLE, KY., Oct. 15—September records of Louisville passenger car dealers show a 25 per cent increase in sales over August and a 10 per cent increase over September of last year. It was said that a greater increase of sales would have been made had not the distributors and dealers been handicapped by their inability to make deliveries of all cars sold.

5 Air Mail Route Contracts Are Let

Postmaster General Awards Concessions to Private Corporations

WASHINGTON, Oct. 11—Postmaster General New has announced the firms to whom have been awarded contracts for Government air mail service. The awards follow:

Boston to New York, via Hartford, to Colonial Air Lines of Naugatuck, Conn.
Chicago to St. Louis, via Springfield, to Robertson Aircraft, Inc., St. Louis.
Chicago to Dallas and Fort Worth, National Air Transport, Inc., Chicago.
Salt Lake City to Los Angeles, to Western Air Express, Inc., Los Angeles.
Elko to Pasco, to Walter T. Varney, of San Francisco.

No awards were made on the proposed routes from Chicago to Birmingham, Chicago to St. Paul and Minneapolis, and from Seattle to Los Angeles.

Indiana Section of S.A.E. Holds Meeting

INDIANAPOLIS, Oct. 15—The first fall meeting of the S. A. E., Indiana section, was recently held here, with A. Ludlow Clayden, of the Sun Oil Co., of Philadelphia, as the speaker, the subject being "Automotive Steam Cooling." His presentation of the subject was unique and a lively discussion followed the experimental set-up and presentation of the results obtained in the research work.

Next month's meeting will be devoted to "Air Transportation," and W. B. Stout of the Stout Airplane Division of the Ford Motor Co. and Lieut. J. Parker Van Zandt, of the U. S. Department of Commerce, will be the speakers. As Indianapolis is anxious to establish an airport, the section will invite prominent men from civic organizations interested in the enterprise, so they may obtain first hand information from the noted speakers.

Bendix Brake Increases Plant and Output

SOUTH BEND, IND., Oct. 15—Officials of the Bendix Brake Co. state that they are not yet at liberty to announce the name of car manufacturers who are adopting Bendix brakes as standard equipment, but orders from these manufacturers call for immediate delivery of 2,000 sets of brakes a day. It is understood that present orders on the books run well over $6,000,000.

Coming Events

SHOWS

Oct. 18-31 — Salonica, Greece, First International Sample Fair.

Oct. 29-Nov. 7—London, annual truck show.

Nov. 5-21 — New York, Automobile Salon.

Nov. 9-14—Chicago, A. E. A. Show, Coliseum.

Nov. 16-18—Chicago, Products Show, National Standard Parts Association.

Nov. 16-21—Detroit, First Annual Bus and Coach Show.

Nov. 26 - Dec. 6 — Berlin, Germany, Annual Automobile Show in the Kaiserdamm.

Dec. 7-20 — Buenos Aires, 8th Annual Argentine Automobile Show.

Jan. 9-16—New York, N.A.C.C. National Annual Show, Grand Central Palace.

Jan. 18-23—New York, Twelfth National Motorcycle, Bicycle and Accessory Show, New Madison Square Garden.

Jan. 16-23—Cincinnati, 16th Annual Auto Show, Cincinnati Automobile Dealers Association. Harry T. Gardner, Manager.

Jan. 18-23—New York, 12th National Motorcycle, Bicycle and Accessory Show, New Madison Square Garden.

Jan. 30-Feb. 6 — Chicago N.A.C.C. National Annual Show, Coliseum.

Feb. 15 - 20 — Louisville, Ky., Louisville Automobile Show, Armory, under the auspices of the Louisville Automobile Dealers Association, J. Garland Lea, manager.

CONVENTIONS

Oct. 20-21 — Greensboro, N. C. Annual Convention, N. C. Automotive Service Association.

Oct. 21-23 — Cambridge, Mass., American Welding Society.

Oct. 21-23—Boston, Fall Meeting, American Welding Society.

Nov. 16-18—Chicago, National Standard Parts Association.

Nov. 9-14—Chicago, Automotive Equipment Association.

Nov. 9-10—Chicago, Hotel La Salle, National Automobile Chamber of Commerce.

Nov. 10-11—Washington, Motor Truck Industries, Inc.

Nov. 17-18—Chicago, National Association of Finance Companies.

Nov. 17-19—St. Louis, National Tire Dealers Association.

RACES

Oct. 17—New Rockingham (Salem, N. H.) Speedway.

Oct. 24—Laurel, Md.

Nov. 11—Charlotte, N. C.

Nov. 26—Los Angeles.

S.A.E. MEETINGS

National

Nov. 9-10—Chicago, Hotel La Salle.

Nov. 12-13—Philadelphia, Automotive Transportation meeting.

Nov.—Service Engineering meeting.

Plans for 250-Mile Race Announced

A. A. A. Warns State Associations of Possible Action by Congress

WASHINGTON, Oct. 14—Eight nationally-known automobile drivers to date have entered in the 250-mile race which will be held on Oct. 24 at Laurel, Md., by the Baltimore-Washington speedway officials. They are: Peter De Paolo, winner of the opening 250-mile race July 11, on the same track; Earl Cooper, Bennett Hill, Jerry Wonderlich, Ralph Hepburn, Bob McDonough, Ralph De Palma and Tommy Milton.

Officials express a belief that the world's 250-mile record, held by Milton, who did 126.8 miles an hour at Culver City last Spring, will be broken. The belief is based on the fact that De Paolo, in a special exhibition run on the Laurel track a week after his previous victory pushed his Duesenberg at 135.6 miles an hour for ten successive laps.

Overland-Knight Sales Records Are Broken

TOLEDO, Oct. 8—According to a statement issued by the company, the Willys-Overland factory has entered the Fall season with production and shipment records breaking all previous highs in the company's history.

Between Jan. 1 and Sept. 15 the factory asserts that more than 155,000 Overland and Willys-Knight cars were manufactured, setting a new production mark for the period, with dealer demand keeping pace with output.

A new company record for shipments in a 15-day period was made when more than 10,500 cars were shipped from Sept. 1 to 15. Factory production schedules and dealers' future orders are held to indicate that Willys-Overland will break all its production and sales records for the Fall season.

Five retail salesmen sold more than $200,000 worth of new cars during the first eight months of the year. The annual sales contest also shows that more than sixty salesmen have disposed of more than $100,000 worth. Charles Phillips, last year's winner, again heads the list with more than $250,000 worth of sales. He is connected with the Toledo branch.

Steel Institute to Meet on October 23

NEW YORK, Oct. 15—The twenty-eighth general meeting of the American Iron and Steel Institute will be held at Hotel Commodore, October 23. Judge Elbert H. Gary will deliver an address and the following papers will be read:

"Silicon Steel," Dr. W. E. Ruder, General Electric Co.; "Stainless Steel," D. G. Clark, manager, Firth-Sterling Co., Pittsburgh; "Higher Temperatures and Better Economy in Use of Liquid Fuels," Max Sklovsky, chief engineer, Deere & Co.; "Alloy Steels Up-to-date," F. E. Clark, sales engineer, National Alloy Steel Co.; "Manufacture and Use of Wrought Iron," A. G. Smith, engineer of tests, New York City; "Ely Process of Manufacturing Wrought Iron," F. H. Dechant, William H. Dechant & Sons; "Rowe Process of Manufacturing Wrought Iron," James P. Roe, Reading Iron Co.; "Aston Process of Manufacturing Wrought Iron," James Aston, chief metallurgist, A. M. Byers & Co., Pittsburgh; and "Low Temperature Distillation of Coal," M. W. Ditto, general manager, Socony Burner Corp.

ENTERS AUTOMOTIVE FIELD

CHICOPEE FALLS, MASS., Oct. 15—Lamb Knitting Machine Co. has entered the automotive field, bringing out two devices. One is the U. S. Rim Tool, a contrivance for the use of car owners in releasing and replacing the tire rim. It weighs three pounds and can be carried handily in a tool kit. The other product is the Wright Safety Auto Heater, an electrical appliance to be placed under the hood to keep the engine warm while the car is in a cold garage. Both products are about to be put on the market. They will be shown at the East-

New 24-Hour Record Made in Bentley

Duff and Barnato on Montlhery Track Average 95 M. P. H. —To Try Soon for 100

PARIS, Oct. 1 (*by mail*)—An average of 95 miles an hour was maintained for twenty-four hours by John F. Duff and W. Barnato, driving a 183-inch four-cylinder Bentley, on Montlhery track, in a successful attempt to break the world's twenty-four hour record. The British car covered 2,280.64 miles, compared with the previous record of 2,103.19 miles, set up by a six-cylinder Renault. Duff and Barnato took three-hour spells at the wheel. Two front tires were changed after nine hours running and two rears after running twenty-one hours. The hood was never lifted.

A sleeve-valve four-cylinder Voisin, which set out immediately after the Bentley had put up the new twenty-four hour record, had to be withdrawn after running a distance of 1,523.8 miles in 16 hour, 5 min. The Voisin secured two world's records, namely six hours at an average of 100.404 miles an hour, and one thousand kilometers at an average of 100.3 miles an hour, both these records being taken from the Bentley driven by Duff.

It is believed that Duff will start shortly to average 100 miles an hour for twenty-four hours and that Renault will also attempt to regain its lost twenty-four-hour record.

TO ADDRESS TIRE MEN

NEW YORK, Oct. 14—George J. Burger, president of the National Tire Dealers' Association, announces that the program for the Association convention in St. Louis, Nov. 17-18, has been strengthened further by the addition of addresses by R. M. Hudson, chief of the Division of Simplified Practice, Department of Commerce, and by Paul L. Palmerton, chief of the Rubber Division.

AUTOMOTIVE INDUSTRIES

VOLUME 53 *Philadelphia, Thursday, October* 22, 1925 NUMBER 17

NEEDED:

A Better Mutual Understanding *Between* Car Manufacturers and Machine Tool Builders

Automobile industry is young, progressive and strong for service. Machine builders who recognize these facts will win leadership

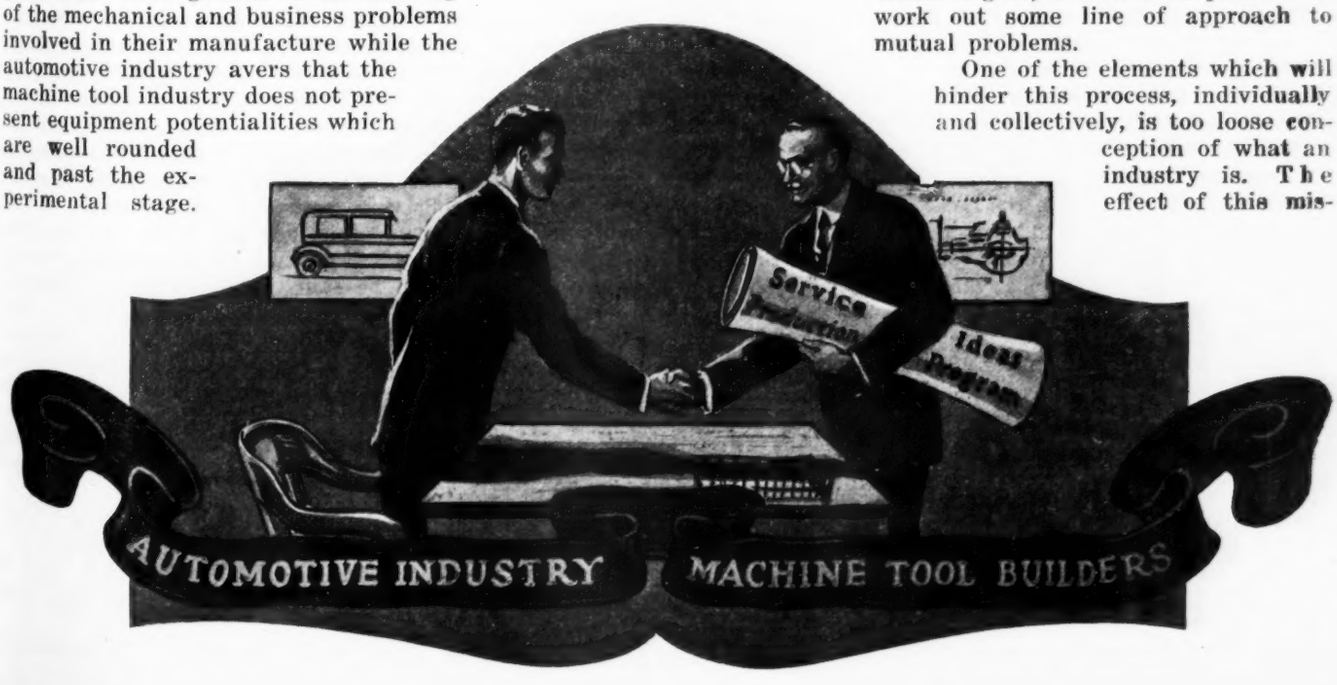
By W. L. Carver

THE automotive industry wants better machine tools. The machine tool industry wants to sell more machine tools to the automotive industry, which is already its largest customer. The automotive industry is sold on the way standardization has assisted in the manufacture and distribution of its product and feels that there is room for greater application of the same theory to its machines.

The machine tool industry looks askance at that proposition. The machine tool industry feels that tools can be purchased with greater understanding of the mechanical and business problems involved in their manufacture while the automotive industry avers that the machine tool industry does not present equipment potentialities which are well rounded and past the experimental stage.

These are some of the high spots of the discussion which developed at the recent machine tool session of the Society of Automotive Engineers at Cleveland. They constitute an excellent specimen of the threadbare comedy situation in which two apparent entities agree and disagree in different languages. In addition to indicating the need for mutual better understanding of the other fellow's problems, these ideas can be resolved into commentaries on each industry. As a matter of fact, the two industries are unlike in almost every respect and speak different languages. Naturally each rotates on the center of its own interest but as their orbits coincide to a considerable degree, it should be possible to work out some line of approach to mutual problems.

One of the elements which will hinder this process, individually and collectively, is too loose conception of what an industry is. The effect of this mis-



conception of the true characteristics of an industry was very apparent at the Cleveland meeting and led to generalities which were not constructive for the members of either group.

An industry of any type is determined only by its product and any firm or individual is a component of a specific industry because of participation in the manufacture and merchandising of a specific class of products; that is as far as the definition can go. Industry is not an entity in which the actions and thought of all of its members are cut to the same pattern. In any industry, as in every walk of life, there are those firms and individuals who are leaders of thought and effort. Behind these is the class which is shoved along by expediency and force of circumstance. Then there are those who wait fatuously for a providential dispensation and finally, the helpless and hopeless. In the face of this perfectly natural condition, long winded diatribes on this or that industry and its trials and tribulations are largely bunk.

Meetings of Constructive Value

That meetings of the type held in Cleveland are of constructive value can not be denied. The automotive industry owes much of its rapid growth to just such meetings but this advance is measured by the actions of its individual members and not by any mysterious process of sublimation on the part of the industry as an entity. Some individuals come to these meetings with advanced ideas based on practice and others conscious of the shortcomings of their own organization's practice have grasped the innovations and then have gone home to put them to work and possibly make further improvements. Ultimately, the color of the entire industry is improved by this process of collaborated individual effort.

In every case the responsibility is individual and the improvement of the industry is the last step in the program. Success or failure of the individual can not be charged to his industry or to the industry which he sells. And there is no room for generalized criticism between industries. The individual can not hide his own responsibility behind the curtain of generalities by talking of the adverse practice of this or that mysterious industry. By looking around for nebulous excuses and apologies in this manner, the individual oftentimes looses sight of the thing which is right in front of his nose. The whole program of better relations between industries is started in the individual transactions between individual concerns, the plain everyday garden variety of business.

Neither Industry at Fault

Both automotive and machine tool concerns are standing in their own light by failing to appreciate this fact. Neither the automotive or machine tool industries is at fault. The blame lies in the business relations of Brown of the Smith Machine Tool Company and Jones of the Black Motor Car Co. Neither of these fellows has developed an appreciation of what the other is really up against in maintaining his place in the sun in his particular field of bitterly competitive business effort. They don't talk the same language and neither understands fully the underlying make-up of the other. The machine tool industry as typified by its members, being the older and more steeped in tradition, has the greater difficulty of the two and sometimes can be caught wondering if this youngster, the automotive industry, is a real fellow and if he is going to be a permanent resident.

The two industries show a vast divergence in historical growth, markets, production and merchandising methods and practically every aspect of individual organization make-up. The automotive industry, being the largest producer of manufactured commodities which are sold to the popular market, is basic and therefore is affected almost solely by fundamental economic conditions. Literally and figuratively, it has its feet in the soil. On the other hand, the machine tool industry which sells to the automotive and other industries is at least one stage removed from the popular market. Therefore it can not be ranked as a basic industry and as a result is among the first to feel the negative effects of a declining economic curve and among the last to pick up on an ascending curve.

Very Different Financially

Financially, the two industries are stars of entirely different magnitude. The average income taxes of the ten leading automotive firms probably will exceed the average income of the ten largest producers of machine tools by a considerable margin. These two factors are bound to introduce different methods of thought and action. But the practice of the members of either industry can not be regarded as established until each has conceded something to the characteristic demands of the other. Here again the machine tool field with the fixed habits of an older generation can afford to modify its habits to good advantage while the younger automotive industry can help by selling its ideas and aims to better advantage.

As human affairs go, the automotive industry, with between 25 and 30 years background, has little or no history and consequently little or no tradition or reverence for tradition. Stepping over the horizon with a new commodity which has altered the manner of life of the country and world permanently, this industry borrowed unsparingly from many of its predecessors. This process, with an unusual patent situation in its early days which forced combined action, has resulted in a remarkable uniformity of thought and method. The Society of Automotive Engineers with its standards, the National Automobile Chamber of Commerce, the dealer and jobber associations, are just a few resultant aspects. Out of the process has grown an industrial frame of mind which is not afraid of innovations and which in the natural course of events will blunder occasionally but in the end usually comes up showing an advance in business ethics, design or production and merchandising methods.

Historical Backgrounds

On the other hand many of the machine tool houses have historical backgrounds extending back for nearly a century. Others trace their history to small New England concerns making the necessities of life of another day, concerns whose machine tool efforts grew out of the necessity for building improved equipment to fit the broadening demands of their own manufacture. In this connection, some members of the automotive industry are prone to take credit for the scheme of progressive manufacture, regarding this method as the discovery of the automotive industry. This idea is a fallacy as witnessed by the statement made by Henry Ford more than twenty-five years ago when he said that some day he hoped to build automobiles like sewing machines. Records show that as far back as 1818, Eli Whitney, known popularly for his cotton gin of fifth reader fame and who evolved the forerunner of the modern milling machine, organized a small arms plant at Whitneyville, Conn., on the basis of progressive manufacture and assembly. Practically every sewing machine and piece of small arms since that time have been built by the same method.

With this historical background it is natural that tradition has grown up apace and with this some feeling of reverence for practices established in other times. But to what extent do these things, desirable as they may seem, enter into modern life?

From another angle, this country has the reputation

of being the more susceptible to change than any other. It seems to accept and grasp mechanical innovations with a minimum of reluctance. Automobile registration figures bear out this statement as does the wide-spread distribution of pianos, victrolas, bath-tubs, vacuum sweepers, tooth brushes, silk stockings, chewing gum and radio. Every one of these is a relatively recent innovation. Therefore in the mass they constitute evidence of capacity and ability to accept change and new methods.

Now we arrive at the nub of the problem, which is—Have the people who form the industries whose products are mentioned above, waited upon a demand or economic pressure for their production and distribution, or have they gone out and created this demand and therefore built up a receptivity and capacity for new elements in the social scheme? The latter portion of the theorem implies the answer which also destroys the finality of the statement that the machine tool industry builds only what the automotive industry demands. As long as individual machine men are satisfied to trail along in the wake of a real or imaginary demand, just so long will they be wondering where security and profits are coming from.

Automotive Men "Just Folks"

The stock reply is that the automotive industry sells to the public while the machine tool industry sells to automotive men who are expert mechanics and engineers and who demand that they be given what they want.

Acceptance of this idea is a short-sighted piece of business. Automotive buyers and those of any other industry are just folks like the people who buy the things mentioned two paragraphs back and are just as susceptible to merchandising. A lot of people don't think any too highly of the utility and economic service of some of the items which were listed but each seems to constitute a utility or service to another lot of the world's buyers. Back of this, the automotive industry, as pertains to individual enterprises, owes its success and growth to an ability to grasp new ideas, designs, methods and equipment.

Merchandising is the keynote of this era of American business and will continue so until a war or some other unforseen influence rocks the boat. Admitting this, does not the receptivity for new things on the part of business or industry and the public generally point the way in which to get out in front instead of wandering along behind the steam calliope?

The era of tremenduous national and industrial expansion in which anything in the way of machine tools or equipment bearing any semblance of reason could be peddled has ended.

The solution now is the development and merchandising of new forms of service which will make obsolete those already in use in established industries.

Diminished Market Bugaboo

Neither does the bugaboo of diminished markets caused by the increased ability of potential new developments in machines, etc., apply any more than the idea that the world is coming to an end in a sheet of flame on next St. Patrick's Day Every man liberated from the industrial scheme by a new machine tool will find something else to do just as he has in the past and the aggregate result will be just the same as it always has been. Selling prices of the commodity will decrease and distribution will increase. Furthermore, the past 25 years demonstrate that the snuffer has not been placed over the ingenuity which develops new articles of commerce and manufacture from time to time. Certainly the airplane industry will increase and require great numbers of men in all departments, including the manufacturing, and with the increasing congestion on our highways, it may be hazarded that the motor boat business is due for a rise. Oil heating equipment and the general run of rural luxuries at present time become necessities.

Some Concrete Examples

As concrete examples, the Studebaker name was once famous in song on its prairie schooners. Borg & Beck made machines for turning wagon tongues and suddenly found that they had no more worlds to conquer. Every plant requiring a pole turning machine was sold up and the wagon business was on the downgrade. Today a million or more automobile clutches known by the same name are in the hands of the buying public.

Proof of the logic of merchandising improved forms of service is offered by an analysis of the recent business activities of some of the foremost machine tool builders. Instead of talking about so much cast iron and bearing metal and shipping machines to jobbers' salesrooms which are already cluttered up with everything imaginable, they are going out to the potential users of their product and merchandising improved production service. Good old fashioned patent medicine copy which bleats about 1000 years of making the Q. P. Whatnot and the historical craftsmanship doesn't go very far with the automotive executive of today—but show him a layout that fits into a comprehensive scheme of manufacture which will cut his costs! These concerns never complain about too many people in the machine tool field. That is left for the fellows who await what the industry demands.

At this writing, the automotive industry is in the throes of learning that the boom days when demand was ahead of any possibility of production are over. In those halcyon times, the profit could be plastered on to any sort of manufacturing expense and new equipment was purchased with abandon. One by one, individual organizations are learning that the net profit must be acquired all along the line, that from now on competition of the "root hog or die" type will rule.

Instead of stifling machine tool purchases, this condition will accelerate them. But new equipment of machines, small tools conveyors, etc., must show savings.

Another Possible Benefit

Incidentally, with a little co-operation on the part of the machine tool builder, this pronounced tendency to plan for greater production savings may benefit that industry in another direction. It is to be expected that planning in this direction which is bound ultimately to become integral with automotive business planning will tend to level out machinery purchases. Possibly this condition will alleviate the condition similar to that in Cincinnati today where machine tool builders have more orders than they can handle, not due to the lack of plant facilities but due to the shortage of men. Meanwhile the automotive industry is raiding the labor market there and at the same time shouting for more machines.

The evidences of greater discrimination in the selection of equipment already are apparent. Not only the initial saving of the estimate will be considered but the ability of the machine to stand up to the job will be measured by the results of definite research work. The automotive industry is one which has never been afraid to tackle the burden and expense of research. The increasing competitive aspects will force the same treatment of production problems that has characterized engineering advances. The machine tool builder who fails to appreciate this tendency by beating the automobile man and his own competitors to it, ultimately will drop out of the procession.

Research work costs a lot of money sometimes, particularly if done by an individual outfit, but if intelligently directed along tangible commercial lines, it pays in the end and should free its originator from selling in competition with so many pounds of cast iron.

Research, however, has been the subject of more abuse and more hysteria than almost any other phase of modern industrial life. Many people visualize research effort as a highbrow laboratory equipped with quantities of dynamometers and diabolic instruments of all kinds where fresh water college professors in smocks and horn-rimmed cheaters perform some sort of mysterious alchemy. As a matter of fact research is merely a process of straight thinking in continuity toward a desired objective or for the determination of an end. The ground work can be accomplished in a drafting room with plenty of paper, pencils and erasers with emphasis on the last named utility. Straight thinking built up from the fundamentals of practice combined with simple demonstrating experiment toward a commercial objective is the foundation and structure of research work in any industry. When based on fundamentals, some abstractions are bound to come into the picture, but first, last and always research must be regarded as an economic rather than a purely engineering or scientific effort.

Standards and standardization are subject to the same treatment. There is no fetish attached to the subject. The S. A. E. standards of today are very comprehensive but they were not born full-grown. They had their origin in simple direct thinking and owe their growth to an appreciation of the other fellow's idea. It must be noted that these standards grew up in an engineering society instead of a trade association. Members of the latter are inclined to think in terms of the immediate pocketbook and like bankers erect stumbling blocks by visualizing standards as scrapping all of the stock on hand instead of looking around the corner for benefits which will accrue to both design and profits in the future.

Standards Already in Effect

Standards already are in effect in the machine tool industry. Among them are S. A. E. and U. S. S. screw threads and many firms use the S. A. E. steel specifications. Oil line and copper tube fittings come in the same class. But pointing the finger at the variation in automobile gear shifts is no criticism of the fundamental soundness of standards. It is like setting a standard for control levers which is to govern both sensitive drills and rotary milling machines. At that, it will be a most difficult job to locate a builder of three speed and reverse transmissions who does not use the S. A. E. standard gear shift because it is reasonable and creates a common ground for builders and buyers. The same soundness applies to carburetor flanges, spark plug dimensions and electrical mounting, to silent chains, bell housing sizes, universal joint extensions, etc. The commercial advantages to both buyer and seller are obvious.

How far any campaign of standardization in the machine tool field can be carried is an open question. No one will know until it is attempted from a small beginning. Standardization, like research, does not involve an endowment fund but rather a little co-ordinated close thinking. The advantages of units which conform to certain standard dimensions are the foundation of the automotive parts business, why should not something similar apply in the machine tool field? Perhaps the size and gage of Tee-slots in machines of similar purpose and capacity are standardized now. Perhaps it is no longer necessary to turn up a new clutch collar when making the transfer from one lathe to another.

Again it is a choice between trailing along behind a nebulous demand or of getting out in front by creating a demand for an improvement in service. We don't know whether the railroad and steel mill shops or the electrical industry are looking for these things in machines but proof that automotive production men are looking around for some of them is at hand. The order books of most machine tool companies will demonstrate the relative buying power of these industries. And the day when a committee of automotive production men will make a formal call on the machine tool industry with a formulated list of demands and suggestions is a long way off.

180-Cycle Motor Used on Grinder

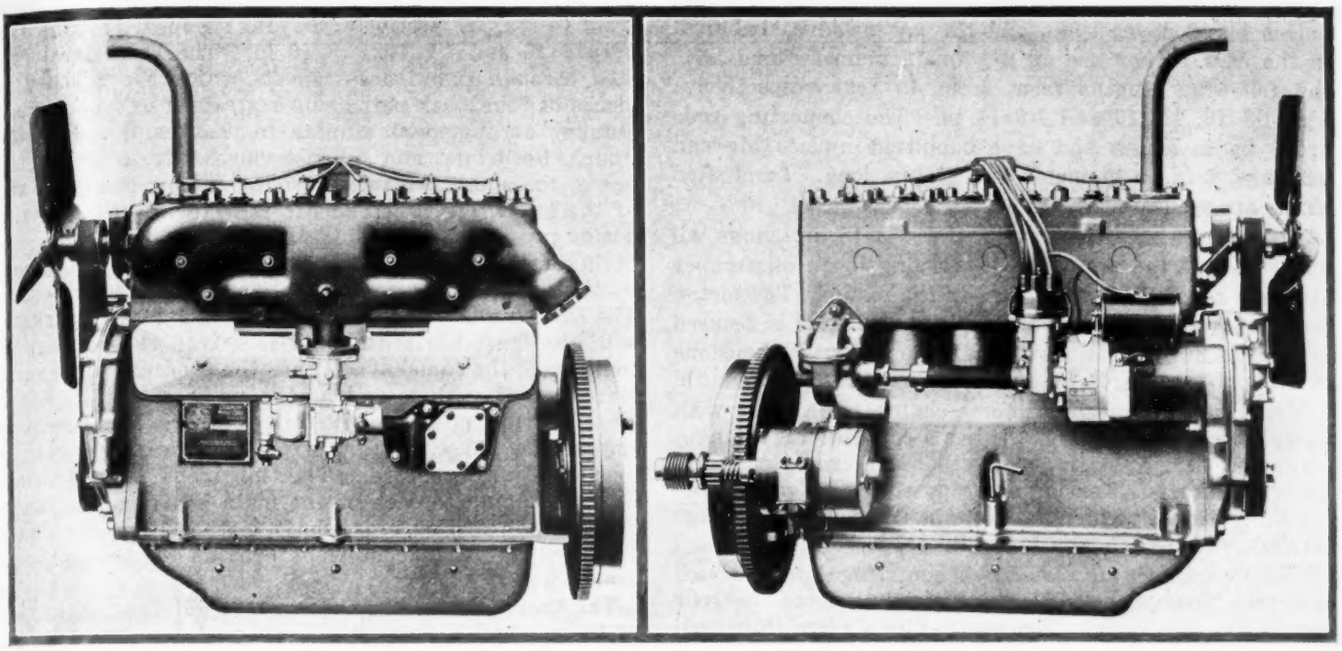
THE Little Giant Hicycle is a portable grinder which is said to have twice the power, one-half the weight and one-third less maintenance than D. C. or 60 cycle A. C. grinders. This tool is equipped with a 180 cycle motor which gives it a free speed of 3700 r.p.m. and a speed under full load of 3400 r.p.m. The use of 180 cycles instead of a direct current motor or a 60 cycle A.C. motor produces considerably more power with less weight than would otherwise be possible.

The induction type motor has a squirrel cage motor wound with bare copper, a heavy shaft and large aluminum fan. The motor and switch housing gear case is built of light weight alloy steel and the gears and rotor shaft are of heat-treated allow steel. Large ball bearings are mounted in dust and emery proof containers.

By the type of power used nearly constant speed is obtained at all loads so that production and life of grinder wheels are increased. Net weight of the tool without wheel is 13½ lb. Size of emery wheel is 6 in. diam., 1 in. face, ½ in. bore; buffing wheel is the same but with 2 in. face. Equipment includes 15 ft. conductor cable and a three point Oliver plug with provision for grounding. The tool is manufactured by the Chicago Pneumatic Tool Co.

THE Shakeproof lock washer made by the Shakeproof Lock Washer Co. of Chicago is a washer that combines a positive lock with non-tangling features so that workers' time is not expended in untangling each washer from the rest before it can be used. These washers are made of clock spring steel and have twelve locking struts placed at an angle of 32 deg., which reduces to 20 deg. when washers are tightened. It is said that they can not mar or distort the product or injure bolt threads. They are made in various sizes up to ¾ in. nominal diameter and in three types, internal locking, counter sunk and external locking. They are rust proof.

ABOUT six months ago considerable interest developed in France in a new process by which it was said to be possible to use low grade petroleum fuels in automobile engines. The inventor, a Russian engineer named Makhonine, had offered the rights for military use to the French army and a series of tests were made by a Committee on Tests at Vincennes. Later on the Committee on Petroleum Science became interested and it asked the Minister of War whether the report of the tests which had been made was considered confidential. The reply being in the negative it asked the inventor for permission to publish the report, but this he refused. Now the committee has washed its hands of the whole matter and it asks the public to draw its own conclusions.



Two views of the L-head engine used in the new Star Six

Low Overall Height and Light Weight are Features of Star Six

Model similar to Four in some respects, although chassis is lower, stream lining is better and "tubular backbone" is not used. Wheelbase 107 in. Rubber ball type flexible coupling

By Donald Blanchard

SOME of the features of the present Star Four are found in the new Six, brief announcement of which was made last week in the news columns of *Automotive Industries*, but in a number of respects the latest job is quite different. The "tubular backbone" construction is not employed and the frame side-rails have a kick-up over the rear axle. The latter feature, together with a drop-center front axle, reduces the height of the chassis and contributes to the low-hung appearance of the cars.

The characteristic Star radiator is retained in the Six but the appearance of the various models has been greatly improved by reductions in the over-all height, which give them the long, low appearance so popular at the present time. In addition, the stream lining is better and the integral sun visor, furnished on the closed models, add to their general appearance.

The wheelbase of the new chassis is 107 in. and its L-head engine has a bore of 2¾ in. and a stroke of 4¾ in. giving it a displacement of 169.3 cu. in. Although the rated horsepower is 18.15, the actual output is said to be 40 hp. at 2400 r.p.m. and the torque at 800 r.p.m. is given as 100 lb. ft. In view of the fact that the weight of the coach model is but 2375 lb., the performance of this new car should be unusually good.

Bodies are built by the Hayes-Hunt Corp. and are finished in sage brush green lacquer with black tops and fenders. In the coach, which has nickel trimmed landau irons at the rear quarters, the folding seat has a hinged mounting which permits its being swung towards the driver, thus providing ample space for entrance to or exit from the rear seat. An unusual amount of leg room, particularly for the rear seat passengers, is provided in this model. Standard equipment includes automatic windshield wiper, rear view mirror, cowl lights and usual instruments.

Natural Finish Wooden Wheels

Hayes wooden wheels with natural finish are used on all models; 29 x 4.40 tires are used on the coupe and coupster, while the coach is equipped with 30 x 4.95.

The engine is a Continental I model 14-L supported at four points by feet cast on the crankcase. The forward supports consist of malleable brackets which are secured to the frame side rails and to the frame cross member which carries the radiator. At the rear, the engine is supported by the second cross member.

The cylinder block and crankcase are cast integral and the latter is carried down 2½ in. below the center line of the crankshaft for stiffness. Oil pan and timing cover are of pressed steel while the detachable cylinder head is of cast iron. The compression ratio is 4.95 to 1.

Four main bearings support the crankshaft, the upper halves being die-castings and the lower halves babbited in the caps. They are all 2⅛ in. in diameter and have the following lengths from front to rear respectively: 1¼, 1 3/16, 1 3/16 and 1 9/16 in. The connecting rods are 9 in. in length and have babbitted-in-place big end bearings, 2 in. in diameter and 1⅛ in. long. Laminated shims are used to fit the caps.

Pistons are cast iron with three 3/16 in. rings all located above the pin. The lower ring is an oil scraper type and relief holes are drilled in the piston. The piston pin has its bearing in a bushing in the rod and is secured in the piston by a set screw and snap rings. Dimensions of this part are 37/64 in. diameter and 2 21/64 in. length.

Front end drive is by a Morse chain 1¼ in. wide with 81 links and a 40 in. pitch. It has a conventional triangular layout passing over sprockets on the crank, cam and generator shafts. Tension adjustment is effected by moving the generator which has slots in its supporting flange through which the mounting bolts pass.

Cooling water is circulated by a centrifugal pump which is driven through a rubber hose coupling from the rear end of the generator. The pump differs from that used on the Star Four in that it has two bearings, one on each side of the impeller, and each lubricated by a grease cup. A sprocket, which also serves as the water inlet to the jacket, supports the pump from the side of the cylinder block near the rear on the left side.

The cooling fan is driven by a flat, endless belt from a pulley on the forward end of the crankshaft. Adjustment for belt tension is the same as on the Star Four except that the slot in which the rear end of the fan shaft clamps is open at the top, thus facilitating removal of the assembly. Lubrication of the fan bearing is provided for by a reservoir, the bearing at this point being the cast iron hub on the hardened steel shaft. The radiator is a Fedders honeycomb and the capacity of the cooling system is 3 gal.

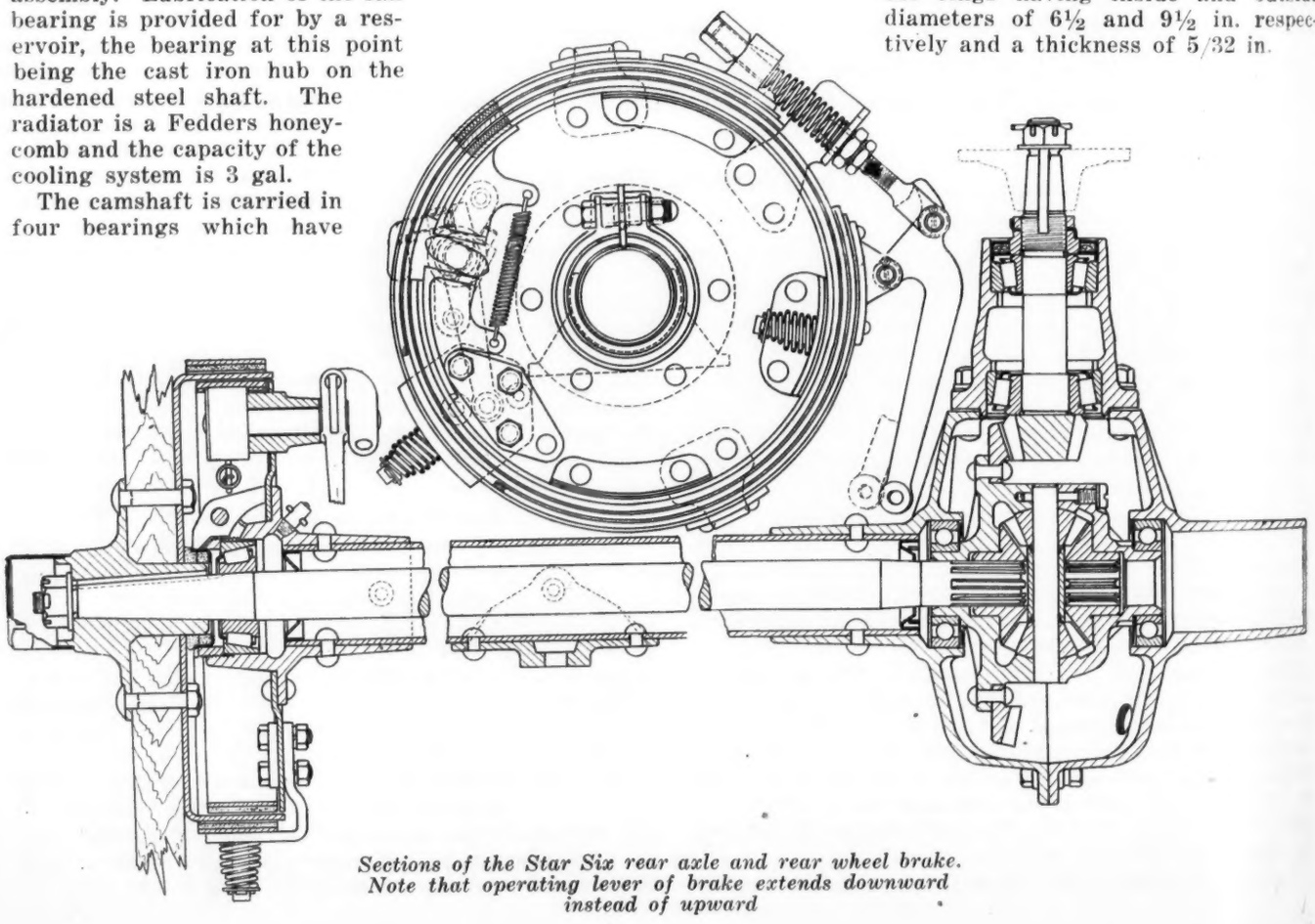
The camshaft is carried in four bearings which have the following dimensions, diameters and lengths, from front to rear, respectively: 1 7/16x1⅜ in., 1 13/16x15/16, 1¾x15/16 and 1 9/16x1 13/16 in. The valves are operated through round nose tappets which are mounted in blocks of four, each pair being restrained by a spring and plunger arrangement similar to that employed on the Four. Both inlet and exhaust valves have nickeled steel heads, the nominal diameter of the former being 1⅜ and of the latter 1¼ in. The lift is 5/16 in. and the valve spring pressure is 77½ lb.

Engine lubrication is by pressure feed to main, connecting rod, camshaft bearings and to the timing chain. The oil pump is mounted on the left side of the crankcase with its shaft horizontal and is driven through helical gears from the camshaft. It has the pressure relief valve incorporated with it and as the valve is readily accessible in this position, the oil pressure adjustment is changed by substituting a stronger or weaker spring as the case may require. The lubricant is distributed through tubing to each of the main bearings and thence through the drilled crankshaft to the crankpin. Ducts drilled in the crankcase webs provide for the camshaft bearings.

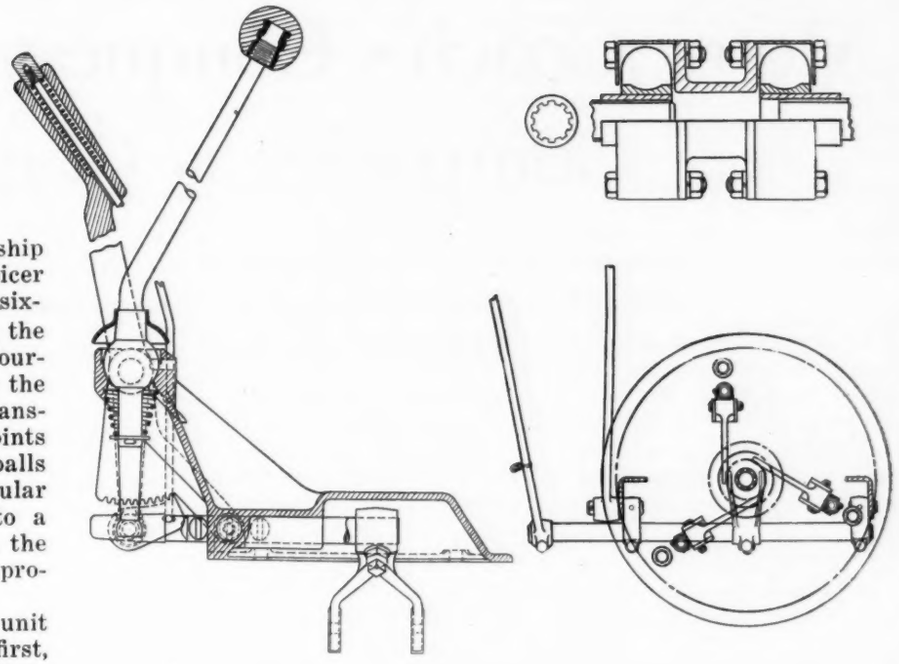
The fuel system comprises an 11½ gal. tank at the rear of the chassis, a Stewart vacuum system and a Tillotson 1-in. carburetor. Intake and exhaust manifolds are cast integrally and the former has a heating jacket.

Generator, starter, cutout, coil and distributor are all of Auto-Lite make and the battery is a USL. The generator is a third brush unit and carries the distributor, coil and cutout. The starter is strap mounted on the right side of the engine and has an outboard Bendix drive. The lighting and ignition switch is a Clum.

Durant practice is followed in the design of the single plate clutch. The facing material is compressed asbestos, the rings having inside and outside diameters of 6½ and 9½ in. respectively and a thickness of 5/32 in.



Sections of the Star Six rear axle and rear wheel brake. Note that operating lever of brake extends downward instead of upward



Mounting of gearshift and emergency brake levers back of transmission housing; rubber ball type of double universal joint, and mounting of clutch and brake pedals

Between the clutch and the amidship mounted transmission there is a Spicer universal of novel construction. In it sixteen rubber balls are used to provide the necessary flexibility. There are two, four-pointed spiders, one a spline fit on the clutch shaft and the other on the transmission shaft. Between each of the points of these spiders there are two rubber balls which are held in position by triangular spacers which in turn are bolted to a channel section ring located between the two spiders. Pressed steel covers are provided for the assembly.

The transmission is a three-speed unit providing reductions of 3.32 to 1 in first, 1.77 to 1 in second, direct to third and 4.3 to 1 in reverse. Except for the fact the cover plate is designed so that the center of the ball on the gear shift lever is about 6 in. forward of the neutral position of the shifter forks, the transmission is conventional. By bringing the gearshifter forward in this way it has been placed in a more convenient position for the driver. The mainshaft is supported in ball bearings and the countershaft and reverse idler in bronze bushings.

The mounting of the transmission differs greatly from that used in the Star Four. In the new six, it is supported in a sub-frame consisting of two longitudinal members between the second and third frame cross members. Its forward end is carried by a cross member connecting the two longitudinal members while at the rear a bracket bolted to the third frame cross member supports the load.

Power is transmitted to the rear axle through a tubular propellor shaft with Spicer universals at each end. While conventional practice is followed in the rear axle, it is an entirely new semi-floating unit and has the two-piece built-up type or housing. The helical reduction gears, which have a 1-in. face width, provide a reduction of 4.87 to 1. Two Timken bearings support the pinionshaft in a carrier which bolts to the differential housing, shims being provided at the joints for adjustment. The two-pinion differential is carried in ball bearings and the outer ends of the axle shafts in Timkens.

The service brakes act externally and the emergency internally on 11-in. drums at the rear wheels. On the external brake, the operating links are located above and behind the center of the axle, the brake band lever extending downward and the rod which operates it passing under the axle. Two pieces of Thermoid lining are used, each 14½ in. long by 2 in. wide with a 5/32 in. thickness, the lining being cut away for a short distance on either side of the anchor which is located at the center of the band. The internal brake is cam operated and takes a single piece of lining 31 in. long, 1¾ in. wide and 5/32 in. thick.

Links connect the brake pedal and hand brake lever respectively on two cross shafts. These shafts extend through the frame side rails and short levers on their outer end are connected by rods to the operating levers at the rear wheels. Equalization of braking is obtained by clearance adjustment.

Detail Dimensions of New Star Bodies

	COUPSTER	COUPE	COACH
Front Seat			17½ by 16 in.
Rear Seat			18 by 45½ in.
Seat	17 by 41 in.	17 by 41 in.	
Height of Back	24½ in.	24½ in.	21⅝ in.
Overall body length	90 in.	90¾ in.	96¾ in.
Overall body height	47¼ in.	48¾ in.	49¼ in.
Height seat to top—			
front	35 in.	36 in.	37½ in.
rear	—		36 in.
Body width at dash	36⅛ in.	36⅛ in.	36⅛ in.
Body width at rear of doors	48 in.	45¾ in.	45¾ in.
Width of doors	29 15/16 in.	29 15/16 in.	29 15/16 in.
Capacity of rear deck	19 cu. ft.	19 cu. ft.	

Semi-elliptic springs are used front and rear. The rear springs, which take the torque and propulsion reactions, are underslung, have nine leaves and lengths and widths of 53¾ and 1¾ in. respectively. The front springs have nine leaves and are 1¾ in. in width, but the length is 35⅞ in. Spring eye bushings are hardened steel and the bolts are 9/16 in. in diameter and 1¾ in. long.

The front axle is a reverse Elliot drop-forging of I-beam section with a drop center. The king pin and tie-rod bearings are bronze bushings and the thrust at the pivots is taken by steel washers. A worm and wheel steering gear, with an 8 to 1 reduction and similar in design to that used on the Four, is employed and is supported by the left front engine mounting bracket.

In addition to the cross members supporting the engine and the rear end of the transmission, there is a cross brace at the front rear spring hanger and another in the form of a wide plate over the gas tank at the rear. The frame side rails have a depth of 4½ in., with a flange width of 1½ in. and a thickness of 5/32 in.

Shipments of the new Six are now being made to zone offices of Durant Motors, Inc., and deliveries to distributors and dealers will start shortly. For the present, only coach, coupe and coupster bodies are being offered on the new chassis and prices on these models have not been announced.

Motor Coach's Conquest of Traction Companies is Complete

Bus now generally recognized as an able companion to trolley in handling mass transportation. Chassis and body development has been rapid but 1926 will likely see many new improvements.

By David Beecroft

THE motor coach's conquest of the electric traction companies is practically complete. It has all been accomplished in fewer than four short years.

Four years ago there was not a single motor coach exhibited at the annual convention and exhibit of the American Electric Railway Association. So acute was the attitude of the trolley interests to the motor coach at that time that a report on coach operation had difficulty in getting recognition at the convention. Three years ago, coaches were exhibited for the first time at the A. E. R. A. Show on the Municipal Pier, Chicago, and since then the movement has been very rapid. Two years ago, the show at Atlantic City was designated as a motor coach show by many who attended, and this year the demand by manufacturers for space was such that all available area in Young's Million Dollar Pier was taken and an overflow exhibit in a nearby tent was necessary.

There has been a complete about-face in the attitude of the trolley interests towards the motor coach. Four years ago the jitney, as the coach was then designated, was merely a fly-by-night, a pirate on the trolley business and something not merely to be despised but to be stamped out of existence by legislative action.

Today a new tune is being played and not merely the motor coach, but the taxicab also, is considered a vehicle of transportation which public service corporations must include as integral parts in what they describe as a co-ordinated and unified system of municipal transportation.

This is well summed up in the last sentence of a report on coach operation by a committee of sixteen of the A. E. R. A. which during the year has been making a complete study of operating costs, etc., of nineteen trolley companies operating motor coaches. Here it is:

> Fundamentally and actually we are transportation men; not merely street car or coach operators. It being our duty to furnish an economical and adequate service, we should use the vehicles best adapted to the community need and a rate of fare equitable to the public served and to the operating companies.

Admit They Were Too Slow

This very fairly represents the views of almost 100 per cent of the trolley interests with regard to coach operation. It is no longer a question of should or should not, but rather how and how soon. Some leaders took considerable time in the recent convention to explain why the trolley interests had been so slow in going to the motor coach, and attempted to lay the blame on legislation, etc., but with the majority, alibis and explanations are water over the dam. They all know they were too slow. They realize now that the motor coach is not a fly-by-night but rather the salvation of the trolley lines, and that it fills a dual role—that of a money earner and of a provider of the kind of transportation the public is demanding.

Today not merely the motor coach, but the taxicab also, is considered a vehicle of transportation which public service corporations must include as integral parts in what they describe as "a co-ordinated and unified system of municipal transportation"

A traction magnate from a Western city expressed it thus:

> "Our people in the last fifteen years have become accustomed to higher standards of living, more modern homes, better clothing, better food, better education, better hospitals and better transportation, as afforded by the motor car and taxicabs."

A good example of how generally the public is not merely wishing for, but demanding motor coach transport, was evidenced in the survey of a trolley company of a city of 250,000 where a very general program of investigation was carried out to secure a correct interpretation of the pulse of the people. Not content with public meetings to discover whether trolley lines should be extended or coach service installed, a series of community meetings was held and in all of these, not a single vote was registered for trolley extension, but every vote was for motor coaches, this notwithstanding the fact that there had not been any extension of trolley tracks for twelve years. Such is the demand for motor coach transportation.

The Tenor Two Years Ago

Two years ago the tenor of the A. E. R. A. in annual convention in Atlantic City was: The motor coach will serve as a feeder for trolley lines and for cross-town service, but it will not serve for mass transportation. That only can be handled by trolley cars. But two years have worked changes and now the coach is demanded in the very hearts of our cities where mass transportation is found at its best. A recent convert to coach transportation is Kansas City, and although the trolley interests set out to give coach service in the suburbs and between the suburbs and the city, the vote of the business interests was that coach service should be installed in the business part of the city.

During the discussion of the report on coach operation participated in by the leading trolley interests of the country, there was not a single voice raised against the coach for city, city-suburb and interurban service. At last the trolley interests which have been so slow to sense the public sentiment in its demand for a higher standard of transportation, have awakened and are a unit, not merely for the coach, but also in casting about to see how the taxicab fits into the scheme of things. All these developments represent a transportation revolution in the A. E. R. A. mind.

With the recognition of the motor coach has come the further realization that the motor coach calls for a new standard of treatment of the public and for a coach type of conductor, or platform man as he is designated, who has a deeper appreciation of the feelings of the traveling public. This too, is a new order of things, and augurs well for a type of conductor as developed by the Fifth Avenue Coach Co. of New York which was the pioneer of motor coach operation in this country, and which created many standards for operation which now are very generally accepted.

The trolley interests are going further in their endeavor to make coach operation the success it can be by generally organizing separate divisions to operate and maintain the coaches, rather than blanketing this in the trolley organization. This is specially true with regard to maintenance, and while some companies place coach maintenance under the master mechanic in charge of trolley maintenance, there is in direct charge of the coach division a superintendent familiar with and capable of coach service.

What augurs best for the success of motor coach operation by trolley companies is the completeness with which they have recognized the size and character of the job they have on their hands. The trolley operators' apathy of four years ago plus the demands of the public for the coach and the status of trolley operation have all combined to give them a stiff course in modern transportation and they have studied the whole question much more keenly than they would have had the adaption of the coach and its incorporation into the trolley system been a much more gradual transition, and one that a trolley man could have accomplished as he felt inclined to.

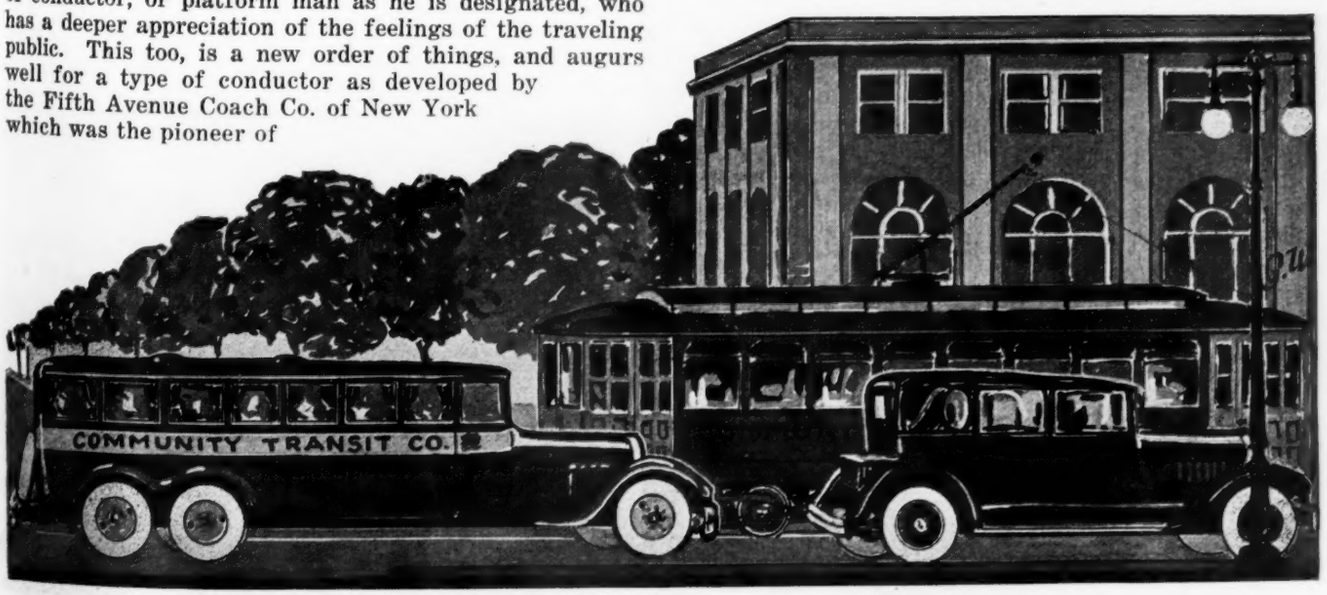
Now that the trolley interests have interpreted the motor coach and its appeal to the public and its fundamentals of operation, they have cast themselves into midstream and are swimming in the main current. Modern garages to house the motor coaches are being built in different parts of the cities as they will best serve the needs. Some trolley companies have converted many of their street car barns into coach garages, whereas others, to do the job right, have erected new ones. These are all indications of how completely the coach has been accepted as a vehicle in the co-ordinated and unified system of municipal transportation.

Measuring the Growth

A yard stick to measure the speed with which the trolley interests are already in the coach field is indicated by a few figures from the most recent records of the A. E. R. A. relating to its membership.

A year ago there were 138 trolley companies operating motor coaches. Today there are 249. This is an increase of 78 companies in twelve months, and a percentage increase of 50.

In the last 12 months the number of coaches in operation



has been increased by 1777. A year ago they operated 1886 coaches. Today they operate 4437. This is a 94 per cent increase.

But apply this yard stick further:

A year ago these trolley companies operated coaches over 2355 route-miles whereas today they are operating over 11,668 route-miles, an increase of 313 per cent.

In this same period 13 trolley companies have entirely abandoned trolley operations and substituted coaches.

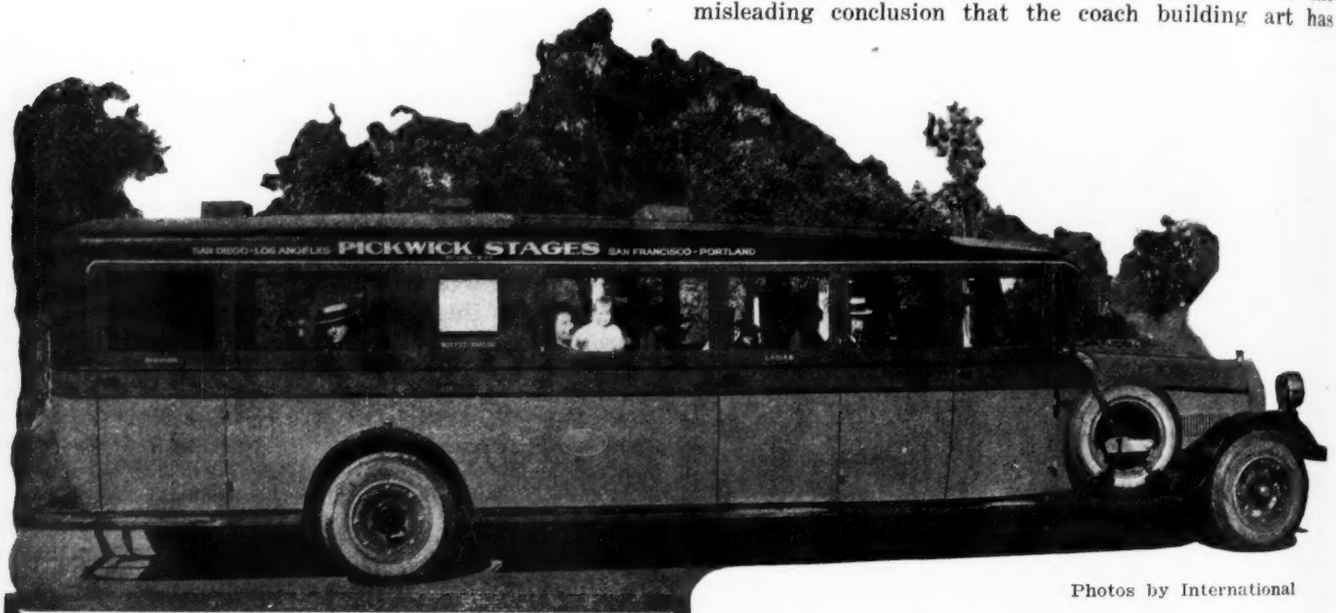
The trolley interests today are operating coaches over 11,668 route-miles, as follows:

City	2,218 route miles.
Interurban	7,751 route miles.
Not designated	1,789 route miles.
	11,668 route miles.

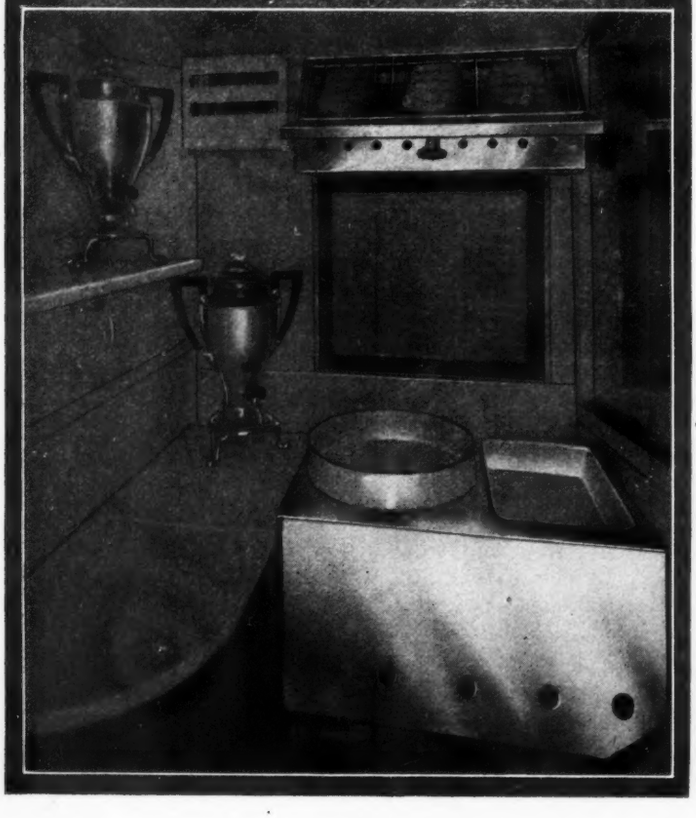
A total of 4,437 motor coaches are used in this service.

Looking briefly at the art of motor coach development as it exists today and as evidenced by the display in the exhibit at the recent A. E. R. A. convention, a few observations may be in order. The coach display was a better balanced one than that of one, two or three years ago. There was a better representation of city types, often unfortunately described as street car types, and a wide selection of de luxe jobs, a name on the tongues of all, due to a lack of adequate coach nomenclature. The display, in its variety, proclaims in unmistakable terms realization by the coach maker that the coach has been accepted for city work as well as for interurban. The exhibit was a physical expression of the change in heart of the trolley people and a recognition by them of the fact that the coach can handle and is handling mass transportation in some of our cities.

Exteriorly, these different types of coaches create a most favorable impression, one that might lead to the misleading conclusion that the coach building art has



Photos by International



The height of development in a de luxe bus for long distance service. This bus of the Pickwick Stages is fitted with a kitchen in which food is prepared for the passengers en route. It also has a lavatory and a commodious smoking compartment. The bus is covering the almost 500 miles from Los Angeles to San Francisco on a non-stop schedule

reached a higher standard than it really has. The bodies in design and finish are all that the heart can desire. But the end is not yet; the past year has had its revelations and a considerable grist of chassis and body improvements is already waiting at the 1926 mill.

Perhaps tires and brakes are giving as much if not more concern than any other chassis features. The 32 x 6 tire on the 20 in. wheel reminds one of the proverbial young bear with all his troubles ahead. For high speed interurban work, the 32 x 6 tire is not all it should be and both coach and tire makers are of the conviction that a 36 x 6 tire on a 24 in. wheel would be a more satisfactory job.

The 20 in. wheel does not afford adequate space for brake equipment. The brake drum heats, often gets very hot in interurban service and too much heat is transmitted to the tire, with serious consequences. For city service with slow speed and frequent traffic stops the 32 x 6 is satisfactory. Tire manufacturers and coach operators will welcome a tire size greater than the 32 x 6 and it is certain that coach manufacturers will design to meet these demands.

Power application of brakes is now certain to become universal on motor coaches and the greater power of application available indicates a need for a more robust design of brake and perhaps certain changes in axle design. Some coach manufacturers are reluctant to fit power application of brakes as standard realizing that it will be much more satisfactory to have axles and brakes designed with power application in mind.

The demands of the public for comfort in coaches already have had their effect. Not a few experts in coach design and operation are agreed that it is only a question of time until solid rubber tires must give way to pneumatics for all types of coaches, whether single deck or double deck. The solids are not giving the riding comfort demanded and engineers are working as rapidly as possible to the pneumatic standard.

It is possible, in fact very probable, that the pneumatic standard will mean a departure from the pressure of 90 to 110 lb. in use today to lower pressures and the semi-balloon type of tire. Tests are already being made with pressures of 50 to 60 lb. and tire development in the next two or three years is certain to develop other radical departures and design that will give the coach the tire resilience it is in need of. New tire types are now in experimental use that give unmistakable evidences of this.

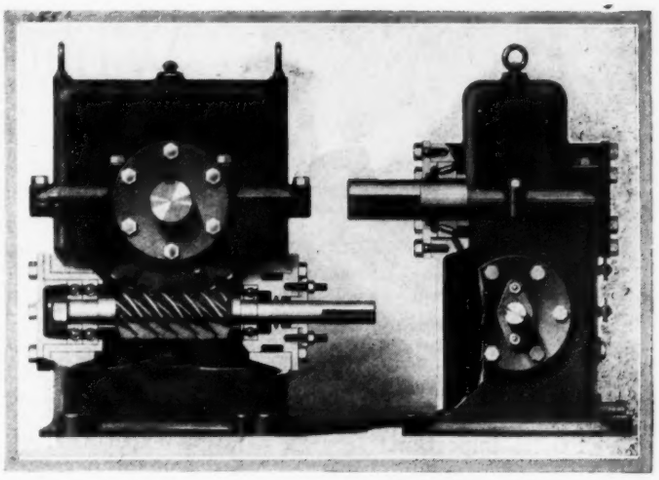
Very considerable development is under way in providing more adequate lighting facilities for coaches, and today larger generators and 300 ampere-hour batteries are being discussed. Too small battery capacity has caused considerable grief to some operators in the last year, partly due to the low ampere-hour capacity and partly to the charging rates of generators. These problems have been recognized for months. The manufacturers of electrical equipment are up to the minute in improving the equipment and bringing it to a high standard. Much of the lighting trouble has been due to the extra lighting loads that body-builders and operators have placed on the system, more than it was designed for. Some bodies are a veritable Broadway with their signal lights, direction lights and advertising lights, to which must be added the various lights required by law and safe operation.

The six-wheeler or multi-wheeler and the gas-electric are creating considerable interest and both are reminders of the fact that the motor coach is not a settled quantity and that many changes may come in the next five years. Suffice it to add that leading engineers and manufacturers are very much awake to the situation.

The requiring of 84-in. bodies in Florida and the Carolinas is more or less unfortunate for a few manufacturers and is a reminder that the interurban coach has legal breakers ahead. The attitude of other states on the question of body width is a matter of concern. A few very good coach bodies shown demonstrate that it is possible to have adequate aisle width with two seats on one side and a single on the other and yet have only 84 in. overwidth. In the last few months some hurry-up calls have been sent from manufacturers to makers of axles to meet the 84 in. requirements.

Coach transportation is in its infancy, but it is a very robust infant and the fact that coaches can only justify their permanent existence on a profit showing basis is proof that development is going to come rapidly. Due to the demand for different types of bodies, development has been a little too rapid in some instances and it is hoped that the demand for coaches will not outstrip solution of the problem of evolving satisfactory designs and of thoroughly testing them before putting them into production. This is essential for economic development.

Worm Type Speed Reducer

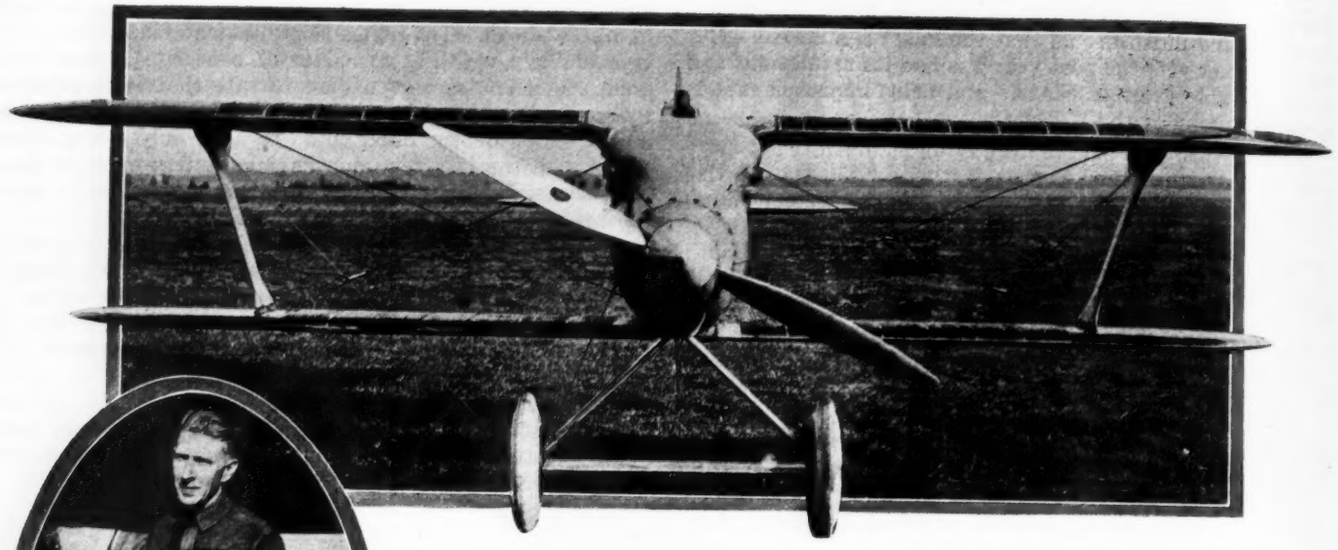


Worm type speed reducer

THE Cleveland Worm & Gear Co. has recently developed an interesting worm type of speed reducer, the main features of which are illustrated in the above photographs.

Four Engines Built Together

ANOTHER solution to the controversey existing on the subject of multi-engined and single engined airplanes has been offered by Louis Breguet. The Breguet Company is offering a single power plant composed of four 8-cylinder engines, two being mounted in a vertical position and two being inverted below the crank case. Each unit is a separate engine with its own crankshaft, camshaft and carbureter, etc., the four engines having a common crank case. The crankshaft of each engine is coupled to a central shaft on which the propeller is mounted. The coupling is so arranged that any motor can be cut out, and will also be automatically cut out in case of failure of some part, involving a sudden drop in horsepower. The engine can then be repaired in flight, while the other three are running, providing this does not necessitate the lifting of the cylinder blocks. With all four engines operating, the unit delivers somewhat over 1000 hp. at 2100 r.p.m.



Front view of the 1925 Curtiss racer, winner of the Pulitzer Race. An identical machine was flown by Lieut. A. Williams, who secured second place

Lieut. C. Bettis, pilot of the Army Curtiss racer which won the Pulitzer race Trophy at 248.9 m.p.h.

What the 1925 Pulitzer Air Meet Revealed—

Disappointing speeds despite progress in design; a development of efficient anti-stall devices; a surprising number of obsolete craft still in use.

By Leslie S. Gillette

BEFORE important foreign aviation experts, President Coolidge's air inquiry board and the personnel of 500 visiting airplanes attending the International Air Races at Mitchel Field, L. I., Lieut. C. Bettis, flying a 1925 Curtiss racer, covered the 125-mile course of the Pulitzer race at an average speed of 248.9 miles per hour, breaking the previous American speed record, two world's records and retaining for the Army the coveted trophy.

It was expected that the new Curtiss racers, specially constructed for this year's event, would possibly recover the world's airplane speed record held by France for nearly two years at 278 m.p.h. or at least better by a greater margin the American record of 243 m.p.h. established at St. Louis by Lieut. A. Williams in 1923. An exact duplicate of the winning machine had attained a speed of 302 m.p.h. with a diving start a few days before the race and also had maintained a rate of more than 260 m.p.h. around a closed course. Great disappointment in the speed of the new racers was shown by pilots and officials, who believed that the engines were not developing the power expected of them. It was said that engines were changed just before the race, and that those installed were not so powerful as those previously in the planes.

Heavy storms and high winds prevented the events of the last two days of the meet scheduled for Oct. 9 and 10 being held according to plan. All contests for the 10th, including the Pulitzer race itself, were held on Columbus Day, Oct. 12, with the races scheduled for the 9th taking place the day following. Adequate provision was made to handle the enormous crowds attending the races, which on the day of the big event totaled more than 100,000.

New York found itself absorbed in the present epidemic of aviation interest during the big races. By daytime, pursuit ships barely clearing the skyscrapers tore from one end of the town to the other while at night the pleasure seeking public turned their faces to the sky to watch the daring skill of the army flyers in their illuminated scout planes. At the hotels, various meetings were held, two of the more important being the Annual S. A. E. Aeronautical Meeting and the banquet of the National Aeronautic Association.

Increase of Private Owners

Out on Long Island, less than an hour's ride from the city, the great concentration of aircraft, both civil and governmental, was staged. The presence of various makes and types of civilian planes, some of them flying from California and Florida to attend the three-day meet, was a positive proof of rapid growth of the corps of private plane owners in this country. There is a lesson to be learned by comparing the machines present with those attending the previous International Air Races held in other parts of the country.

Quite a large percentage of the ships present in the fields adjoining the scene of the races were not the usual kind of two place machines used for carrying paying passengers, but were planes of the type which have been developed for special commercial work for which nothing other than air-

planes are suitable. Particular reference is made to aerial photography, carrying special newspaper material, aerial dusting of crops and trees and also emergency freight carrying. Between the eleven races which were conducted during the meet, the spectators were entertained with special formation flying by scout and bombing squadrons, parachute jumping, aerial combat, stunt flying and demonstrations by various makes of civilian planes.

Two of the civilian exhibitions of particular interest showed the public that by means of special development and design it has been possible to overcome one of the most important causes of airplane accidents. Both inventors were from foreign countries and their patented and secret devices were intended to prevent accidental stalling when in flight. Anthony G. Fokker, famous Dutch manufacturer, had anti-stall features incorporated in the wind design of his three American engined Fokker monoplanes. Carrying ten passengers Mr. Fokker would pull the nose of his giant monoplane up until it stalled about 1,000 feet above the heads of the spectators in the race enclosures. Instead of going into a steep dive or falling into a spin as is customary when the ordinary type of machine goes beyond the stalling point, the plane would sink on an even keel automatically gaining speed in its natural angle of glide.

The anti-stall device of Savage-Bramson was attached between the struts of a SE-5 biplane belonging to the Skywriting Corp. of America. Capt. C. B. D. Collyer flying the SE-5 at a speed of 110 m.p.h. passed close to the ground before the enclosure with his hands held above his head, demonstrating the safety of the new device.

Stout Plane Draws Crowd

Another interesting machine which caused unusual interest in the civilian camp because it had not been seen in the East before, was a Stout metal monoplane built by the Ford Motor Company. The plane was consigned to the John Wanamaker Stores, N. Y., which is the first purchaser of a Ford airplane. Upon being dismantled, the monoplane was transported to the Wanamaker department store where it is offered for sale, the price being $25,000 fully equipped. It is interesting to note that John Wanamaker sold the first Ford automobile in New York 21 years ago.

In the military reservation could be seen several planes of recent design which showed a very fine performance in the air. On the other hand, there were scores of machines present whose design dates back to the war period. These planes were used extensively in the manoeuvres last week in spite of their obsolete design. There are only three groups of up-to-date fighting ships in the army at the present time. The three squadrons of fifteen planes each, are formed of attack, pursuit and bombardment machines, respectively. In the exhibition hangar, the public could see some of the latest types of aircraft we have available in this country, yet with the exception of the 25 Curtiss planes and several of the new bombers, the spectators were entertained to exhibition flying by airplanes which were obviously out of date.

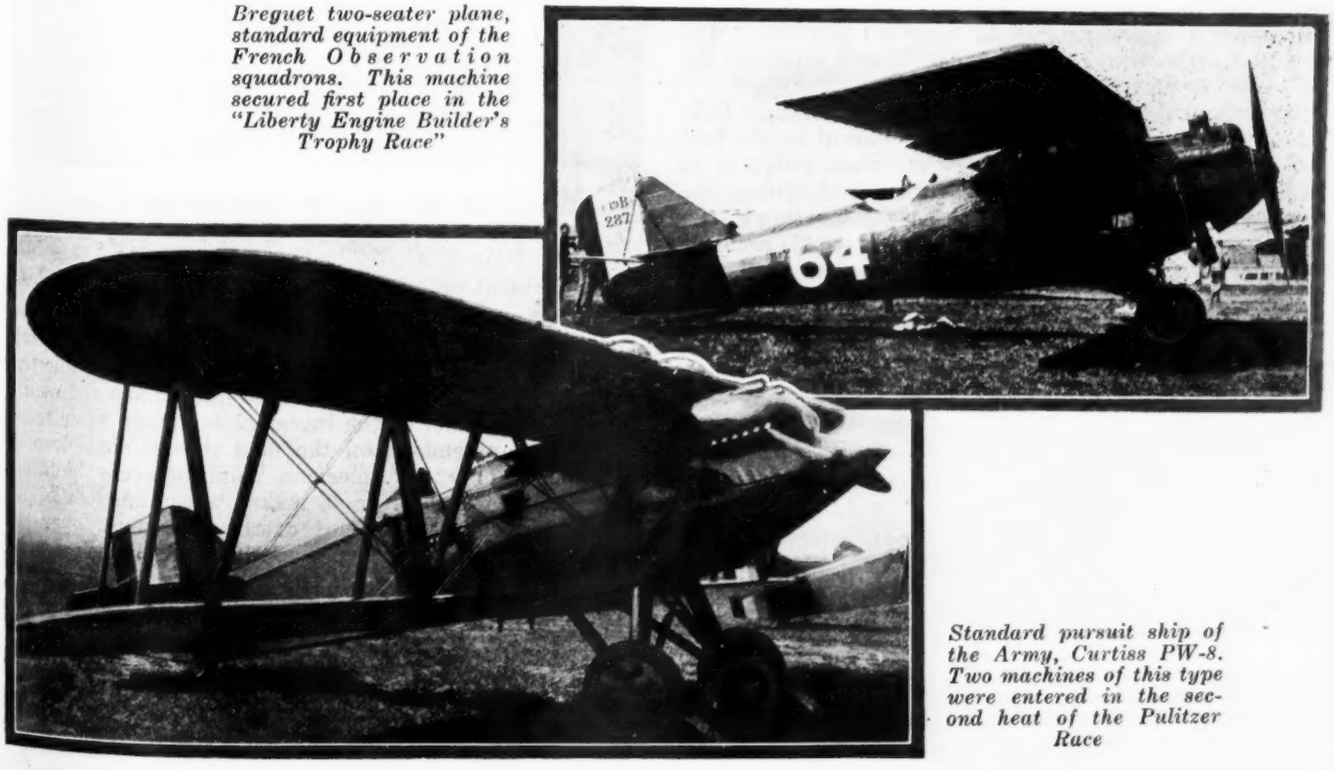
French Machine Wins

This phase was particularly evident in the "Liberty Engine Builder's Race" for two seater observation planes. Two Breguet machines, standard equipment of the observation squadrons of the French air service, secured first and fourth places in this race respectively. This was the only event in which they were entered. The winning machine was powered with a 460 h.p. Renault engine while the other plane had a 350 h.p. Lorraine power plant. Later the first machine was placed along side of the American machines in the exhibition hangar and because of its unusually clean design and modern construction caused much favorable comment.

Along with such up-to-date machines as the Loening Amphibian, Douglas Transport and Curtiss bomber wer examples of 1917 and 1918 design planes shown in the exhibition hangar. Particularly noticeable was a DeHavilland-4 and a Spery Messenger, both of war-time build.

Two new examples of airplane engines were also to be seen at one end of the exhibition hangar. Both were air-cooled radials although of totally different principle of operation. The smaller of the two was a product of the Rickenbacker Motor Co., Detroit, designed to be produced

Breguet two-seater plane, standard equipment of the French Observation squadrons. This machine secured first place in the "Liberty Engine Builder's Trophy Race"



Standard pursuit ship of the Army, Curtiss PW-8. Two machines of this type were entered in the second heat of the Pulitzer Race

THE SIX YEARS' HISTORY OF THE PULITZER TROPHY RACE

YEAR	LOCATION	PILOT-WINNER	SPEED	PLANE	SERVICE	HP.	DISTANCE
1920	New York	Capt. C. C. Mosley	178.5	Verville	Army	600	132.00
1921	Omaha	Bert Acosta	176.7	Curtiss	Navy	405	153.50
1922	Detroit	Lt. R. L. Maughan	205.8	Curtiss	Army	375	155.30
1923	St. Louis	Lt. A. J. Williams	243.6	Curtiss	Navy	500	124.27
1924	Dayton	Lt. H. H. Mills	215.7	Verville	Army	520	124.27
1925	New York	Lt. Cyrus Bettis	248.9	Curtiss	Army	600	124.27

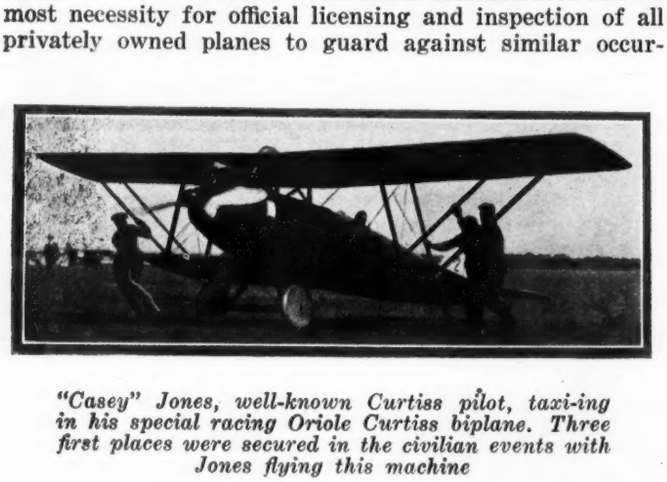
at a low price and to be more economical in operation than those at present available. Specifications of this engine were not available but it appeared to be an orthodox design five-cylinder engine of approximately 60 to 70 hp. This engine has not yet been in the air, but according to exhaustive block tests the fuel consumption is expected to be about 35 miles to a gallon of gasoline. Capt. E. V. Rickenbacker, who has been working on the engine for the past seven years, discussed a new type of airplane which he claims will replace the present wing and fuselage type of ship. Patents have been taken out covering the principle of construction which is understood to involve no fuselage but a series of graduated planes, the largest wing in front and the smallest at the rear. It will also be fitted with a special gyroscopic control device.

A Fairchild-Caminez Design

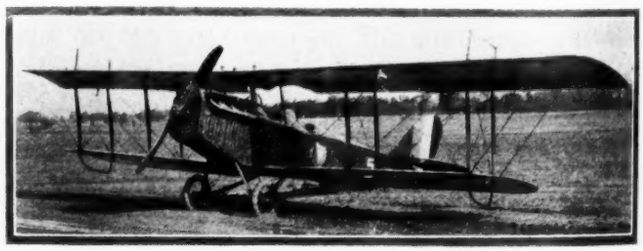
Fairchild-Caminez Engine Corp., Farmingdale, L. I., are the manufacturers of the other air-cooled radial engine exhibited, which is rated at 150 hp. This engine is of entirely new design in that it employs no gears, connecting rods or cranks, but instead a flat cam and four roller bearings mounted on the piston pins. It has passed successfully a 50-hour test run at McCook Field developing its full power at 1,200 r.p.m. An unusual feature is the propelled drive which runs at half speed although no gears are employed.

Throughout the three-day program there were singularly few accidents except during the opening event on the first day of the meet when an old war-time plane collapsed in the air, badly injuring the pilot-owner and killing the passenger. Had there been compulsory inspection of the aircraft participating in the races, the regrettable accident would not have occurred. The crash demonstrated the utmost necessity for official licensing and inspection of all privately owned planes to guard against similar occurrences which might happen to many machines carrying passengers all over the country. The plane in question was constructed originally in 1918 as a rotary engined biplane and after being reconstructed more than once appeared at the race in the form of a stationary engined monoplane. The collapse occurred when the plane was under normal flight, the wing seeming to become detached from the fuselage, showing that the machine was structurally unsound through incomplete understanding of airplane design stresses. It may be said that quite a number of war-time machines are flying which have been reconstructed by incompetent designers, and a few coming within this class were to be seen at the air races.

At this particular stage in the aviation industry, the public must be shown the reliability of aircraft and when a plane crashes, no matter the cause or condition, the public is inclined to class all airplanes as generally unsafe. If one studies the accidents which have occurred during the past year, the cause can most often be traced to structural defects developing in time-worn planes which should have been scrapped five years ago or never allowed to fly at all.



"Casey" Jones, well-known Curtiss pilot, taxi-ing in his special racing Oriole Curtiss biplane. Three first places were secured in the civilian events with Jones flying this machine



The most popular type of civilian airplane. Over 45 of these privately owned "Jennies" (Curtiss JN-4) were parked in the civilian field

This accident prompted a survey by *Automotive Industries* to determine the number of seemingly obsolete planes attending the races. On account of several machines being engaged in the races or landed in adjacent fields while the survey was made, strictly accurate figures are not available but the results of the investigation made when most planes were assembled on the field showed that despite there being only 20 American manufacturers building planes at this time, over 43 makes were represented in the machines present. Out of the 43 makes, over 80 different type models or types appeared. With such a wide diversity of types and makes it is apparent that the pedigree of a number of the planes must fall within any of the three following classes: 1. Foreign war surplus stock; 2. Discontinued manufacture; 3. Privately built or revamped American war machines.

Only in very exceptional cases are planes in any of these classes really in a fit condition to fly today.

As can be seen by studying the following list, about 30 per cent of the types (not total number of planes) can be considered as obsolete and in most cases can be traced back to war surplus stocks. Of the 43 manufacturers listed, over 25 are foreign with quite a large majority of the latter out of business. Included in the list are several domestic builders who have been out of the building field for quite a few years. On the other hand, some of the finest machines in the world were shown and it is upon these planes that we must rely for the future of aviation in this country. There is not the slightest doubt that within another year a number of the older types of planes will disappear just as the number of makes of automobiles has been steadily reduced, as pilots are finding that in order to make money they must have the most up-to-date and reliable equipment available.

Quite a number of the planes participating in the con-

The three engined Fokker monoplane which was demonstrated to be incapable of accidental stalling. During the exhibitions by the Dutch manufacturer, ten passengers were carried

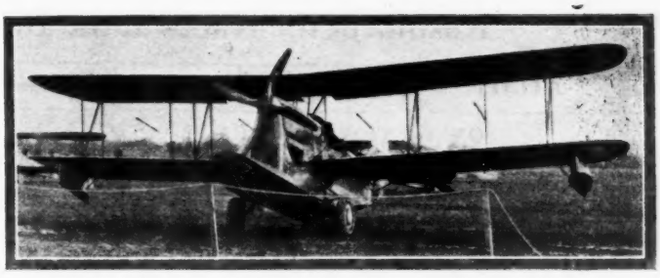
tests had taken part also in the Inter-city Reliability Tour for the Ford Trophy a week previous. These planes were of the more up-to-date commercial type carrying from

Planes at the Races

This table shows various makes of airplanes present at the air races and also number of different models of each make and approximate number of types which may be considered of obsolete design. It shows only the various makes and corresponding number of models for each and not the total number of machines present.

Make of plane	No. of types	No. 5 yrs. old or more	Make of plane	No. of types	No. 5 yrs old or more
Aeromarine	1	1	Lawson	1	—
Avro	1	1	Loening	1	0
Bellanca	2	1	L. W. F.	1	1
Boeing	1	0	Martinsyde	2	2
Breguet	1	0	Martin	3	1
Brock	1	0	Mercury	1	0
Can. Curtiss	2	1	Mentee	2	0
Comet	1	—	Orenco	1	1
Consolidated	2	0	Pitcairn	1	—
Cox-Klemin	4	0	Reming-Burnelli	1	0
Curtiss	11	3	S. E.-5	1	1
DeHavilland	3	2	Sikorsky	4	0
Douglas	4	0	Spad	1	1
Eagle Rock	1	—	Sperry	1	1
Fokker	6	1	Swallow	1	0
Ford	1	0	S. V. A.	1	—
Handley-Page	1	1	Sopwith	2	2
Hartzell	1	—	Thomas Morse	2	2
Huff-Daland	2	0	Waco	1	0
Ireland	1	0	Travel Air	1	0
Junkers	1	0	Lincoln	2	1
Laird	1	1			

Number of makes present 43
Number of different types 80
Number of obsolete types 24



One of the most interesting and up-to-date planes belonging to the army. This is the Loening amphibian biplane fitted with an inverted 400 hp. Liberty engine

one to four passengers besides the pilot and using engines ranging from 90 hp. to 400 hp. C. S. Jones, civilian Curtiss pilot, won first place in three events with a Curtiss Oriole specially constructed with a short lower wing and a single set of interplane struts for high speed racing. It is interesting to note that the Oriole was fitted with the same type of wing type radiators which were originally developed for the 1922 and 1923 Pulitzer races. The maximum speed of the plane is around 140 m.p.h.

With one exception, the "light" planes were much the same type and construction as those taking part in the low-power airplane contests at Dayton last year. Several improvements had been made, both in their construction and performance since that time but they failed by a large margin to make a showing alongside the Powell racer which was constructed in Detroit and shown at the races for the first time. All previous and present types of "light" airplanes in this country have been using glorified motorcycle engines in their power plants, but the Powell machine employed a special light airplane engine known as the Bristol and constructed in England. This particular type of engine has proved itself to be very efficient and reliable on the other side and it seems that to obtain satisfactory results with "light" airplanes, real light airplane engines must be employed. The Bristol engine is an air-cooled horizontally opposed four-cycle engine of approximately 16 rated hp. Fitted in the Powell racer, which was a miniature single bay biplane with a three-ply built up fuselage, the machine had a maximum speed near 80 m.p.h., and once during the races reached an altitude of 10,500 ft.

Race Run in Two Heats

Turning to the premier event of the meet, the Pulitzer race was run in two heats this year. The two specially constructed Curtiss racers flown by the Army and Navy respectively formed the first heat and four pursuit ships developed from the 1923 racers, two flown by the Army and two by the Navy, formed the other heat.

The design of the two 1925 racers were identical in every respect. While closely resembling the famous 1923 Pulitzer machines which set the record of 243 m.p.h., the new Curtiss planes possess many new features. The most important factor contributing to the higher speed is the engine which is rated at over 600 hp. Known as the V-1400, this engine has the same major characteristics as the D-12 power plants which have been used in the races of previous years. The increased power has been obtained in the redesigned engine by employing even higher compression than in the D-12's, by special valve timing and by the use of lighter materials. It is claimed that in spite of giving 200 hp. more than its prototype, the V-1400 is thirty pounds lighter than the original D-12. An unusual feature is the forming of the propeller hub integral with the crankshaft instead of being a separate unit as for-

Results of the Races at the International Air Meet

Place	PILOT	PLANE	ENGINE	Horse-power	Speed
ON TO NEW YORK RACE					
(Open to all makes of civilian airplanes—Prizes, $3,000)					
1st	Kenneth Montee	Montee	Curtiss	125	....
2nd	E. L. Remelin	Curtiss	Curtiss	125	....
GLENN H. CURTISS TROPHY					
(Open to all two seater low horsepower civilian airplanes—Prizes, $2,500)					
1st	Basil L. Rowe	Thomas Morse	Aeromarine	105	102.9
2nd	E. P. Lott	Thomas Morse	Curtiss	125	100.7
MERCHANT'S ASSOCIATION OF NEW YORK TROPHY					
(Free-for-all race for 2, 3 or 4 place civilian airplanes—Prizes, $2,500)					
1st	C. S. Jones	Curtiss Oriole	Curtiss	143	134.2
2nd	Fred H. Becker	Ballance	Wright	196	121.8
LIBERTY ENGINE BUILDER'S TROPHY RACE					
(For observation two seater military airplanes—Prizes, $2,500)					
1st	*Capt. H. Lemaitre	Breguet	Renault	463	129.1
2nd	Lt. E. B. Bayley	Douglas	Liberty	412	128.3
AVIATION TOWN AND COUNTRY CLUB OF DETROIT TROPHY					
(Light commercial speed and efficiency race for civilian airplanes—Prizes, $2,500)					
1st	C. S. Jones	Curtiss Oriole	Curtiss	143	128.4
2nd	Basil Rowe	S. V. A.	Aeromarine	184	119.8

Place	PILOT	PLANE	ENGINE	Horse-power	Speed
DAYTON DAILY NEWS LIGHT AIRPLANE TROPHY					
(Open for light civilian airplanes—Prizes, $2,500)					
1st	G. V. Dack	Powell	Bristol	16	71.1
2nd	Clyde Ernrick	Johnson	Henderson	19	64.8
DETROIT NEWS AIR TRANSPORT TROPHY					
(Race for large capacity military airplanes—Prizes, $2,000)					
1st	Lt. E. E. Harmon	Huff-Daland	.....	...	119.9
2nd	Lt. C. F. Schilt	Douglas	Wright	486	118.0
SCIENTIFIC AMERICAN AND AERO DIGEST TROPHY					
(Speed and efficiency race for light civilian airplanes—Prizes, $2,000)					
1st	J. A. Faucher	Powell	Bristol	16	76.4
2nd	Clyde Ernrick	Johnson	Henderson	19	67.5
JOHN L. MITCHELL TROPHY					
(Closed event for pilots of first pursuit group—Prizes, Loving cups)					
1st	Lt. T. K. Matthews	Curtiss PW8	Curtiss	400	161.5
2nd	Lt. G. F. Chulgen	Curtiss PW8	Curtiss	400	158.7
PULITZER TROPHY					
(Race for high speed civil and military airplanes—Prizes, $4,000)					
1st	Lt. C. Bettis	Curtiss	Curtiss	600	248.9
2nd	Lt. A. J. Williams	Curtiss	Curtiss	600	241.7

***Entered by the French air service.**

merly. This allows a true propeller blade form as the double twist at the hub is eliminated.

Structurally the racing biplane is the same as the 1923 type employing a monocoque fuselage, wooden wings covered with canvas and wing type radiators which form a large part of the lifting surface, single end struts and internal shock absorbing wheels. The strut which separates the upper and lower wings on either side is of new design and is made of solid spruce. In the former racers it was hollow and built up with spruce.

The greatest change in the plane this year was the adopting of an entirely new wing curve which had been under development and tested in the wind tunnel for several months. This factor, together with more careful attention paid to cutting down the head resistance and, of course, the larger engines were responsible for the greater speed. All fittings are now concealed inside the wings or body so that there is a minimum amount of drag, while the streamline of the windshield and the head cowling has received more attention.

In contrast to former Pulitzer racers, the new machines were constructed so that the pilot could wear a parachute comfortably. On account of the smaller cockpit necessary with the new streamline design, a quick opening door has been formed in the side of the cockpit so that the pilot can leave his machine easily should it be necessary for him to resort to his 'chute. The door is controlled by a lever which throws it open and holds it at the maximum opening. All characteristic dimensions such as span, chord, length control dimensions are the same as on the earlier models.

Next in importance to the Pulitzer contest is the Schneider Cup race for seaplanes which takes place at Baltimore, Md., Oct. 24th. Two foreign entries, both of British manufacturer, are entered. The planes recently have been undergoing secret trials near Baltimore.

A formation of Curtiss PW-8 pursuit ships of the army flying over the heads of the race spectators. These machines are the standard equipment of our pursuit group

Just Among Ourselves

Better Business Bureau Raps Automobile Ads

NOW the Better Business Bureau of Indianapolis is on the war path about extravagant claims in automobile advertising. Analyzing advertisements in a Sunday newspaper, the B. B. B. says "five advertisers claimed the greatest value; one non-surpassable; one 'always in the lead in body style and engineering;' one outselling in the 'world's most exacting market'; two that each surpasses all other cars in the light car class, while one claimed for its entire line 'the greatest values ever offered in the industry.'" The B. B. B.'s comments are sound but not new. They point out that the public can't be expected to believe all the claims; that the result is to bring about lack of confidence in all automobile advertising and also to "depreciate the value of every advertising dollar" by creating suspicion of the truthfulness of all advertising. The B. B. B. ends with a plea to Indianapolis automobile manufacturers and dealers to take the lead in "cleaning house," making that plea on the sound basis that "it will mean more money in your cash drawers."

Individual Has Some Rights, After All

WHILE we agree with this line of reasoning, we don't get as much excited about bunk in advertising as we used to. Maybe we are getting old and "detached." But after all, the money belongs to the car makers to spend as they see fit. If the public doesn't fall for bunk, then there's no harm done to the public; so no social evil is being propagated. The manufacturer, in that case, would fail to get anything like maximum returns on his advertising investment, but that's rather his own business, isn't it? We may think a man foolish to waste his time reading *Snappy Stories*, but he probably thinks we're crazy for spending ours with *The American Mercury*. He has a right to spend his money as he wishes, just as we have. The B. B. B. argues, of course, that extravagant advertising by automobile manufacturers hurts those advertisers who stick more closely to the facts. But even the latter type of advertiser simply is pursuing what he considers the best way to sell more goods. The extravagant claim advertiser is doing the same thing. We disagree with the latter's judgment, but we uphold his right to his method so long as he continues to be so extravagant that nobody believes him.

Getting Rid of the Barnum Tradition

THERE is too strong a tendency in all of us, we think, to impute to others a degree of credulity far in excess of our own. Truth in advertising has been proved a sound business proposition; and truth in every phase of business and industrial relationships is more potent in the long run than is exaggeration. Were it not for this tendency—which most of us suffer from—to belittle the intelligence of our prospects, our customers, our associates or our employees, business would run along with a lot less friction and a good deal more happiness. The way out is through individual effort to operate frankly and sincerely on all occasions; to avoid rationalizing like a plague. Christopher Morely, writing of a friend in one of his *Shandygaff* papers, expresses the ideal aptly. "Such a man," Morely writes, "can never be happy when the course of his daily routine wishes him to praise what he does not admire, to exploit what he does not respect. The most of us have some way of quibbling ourselves out of this dilemma. But he cannot do so, because more than comfort, more than clothes and shoe leather, more than wife or fireside, he must preserve self-respect." A hard way out to be sure and one which few of us have the courage to travel, but the only way after all.

Park with the "L" and Ride with the "L"

THE Philadelphia Rapid Transit Co. has started to apply the outlying-fright-terminal idea to passenger transportation by provision of parking spaces for automobiles at two ends of its elevated system. This announcement, recorded in our news columns last week, has special significance as being perhaps the first working out of one of the theories held by students of the traffic situation for some time. The parking fee of 25 cents includes two rides on the elevated lines, which makes the cost of parking actually 10 cents. Provision is made for parking a total of 750 automobiles. Real assistance in relieving traffic congestion in the downtown area will have been made very quickly if 750 vehicles per day are eliminated from the crowded sections. Constructive effort is being made to sell the idea to the individual motorists. The working out of the plan should furnish excellent data for study by other cities faced with the same problem. N. G. S.

Press Work and Welding Combined in Parts Manufacture

All-steel tops, doors, windshield bases, stanchions, axle housings and other units are made at the plant of the Heintz Mfg. Co., from sheet steel stampings, which are welded together in fixtures. Close limits maintained

By L. S. Love

WELDING in its various forms is largely used in the plant of the Heintz Mfg. Co., Philadelphia, maker of stamped goods and assembled sheet metal goods. As a result of the use of welding processes this company has been able to produce some pieces of an unusual character. A special seam-welding machine operating on the arc principle has been developed, the electrical equipment for which was furnished by the General Electric Co. This machine is used in the manufacture of rear axle housings.

Jigs are generally used in the production of difficult stamped and welded assemblies. These not only make for greater speed in production but they eliminate to a large extent the human factor with its tendency toward error, and make it possible to insist on close limits of accuracy in the finished product.

Units Shipped Before Assembly

In some classes of work made by the Heintz Co., it has been found desirable to defer final assembly till the work reaches its destination, because the product can be shipped in the knocked down condition either more conveniently or at less cost. In such cases the customer is tooled up to do the final assembling in a welding jig designed by Heintz, or in case the welded assemblies are to be bolted together, they are so designed as to require a minimum number of bolts.

The first of the really difficult jobs, the successful completion of which helped with a number of others, was a windshield base which replaced a die casting of aluminum base alloy. In this case, as in all others, a hand-made sample was first produced, to make sure of the practicability of the piece as made from sheet steel, before going to the expense of making dies. The hand-made model is put through tests for rigidity and accuracy to determine its ability to sustain the loads to be carried. The illustration of this part shows the various steps of forming, trimming, bending, etc., leading up to the welding, in which forged reinforcing plates to take tapped holes are welded into the pressed pieces. The entire assembly was required to conform to the cowl contour and also to the correct angle for the stanchion anchor holes. This work was done by gas welding.

The experience in making the windshield base led to the next step in the development of welded assemblies at the Heintz plant. This took the form of windshield stanchions and gipsy quarters. The stanchions are made right and left, to fit directly to the cowl. Nine pieces made separately are welded together to compose the complete stanchion. The welding includes several seams by electric arc, some spot welding and also gas welding in several places.

The finished article is noteworthy for several reasons: First, it must permit of running through it,lengthwise, a tube for an automatic windshield wiper. Also, it must have a slot to serve as a curtain guide. This slot must test to plus 0.002 in., minus 0.002 in., as it must permit free movement of the curtain when lowered and at the same time must be sufficiently snug to prevent curtain slap in a breeze. Other portions are held to close limits. The angle at the bottom, where the stanchion fits on the cowl, must test to plus 0.0005 in., minus 0.0005 in., and when set in a testing fixture must register the windshield trunnion with a sliding bushing on the fixture when the top end of the piece is against a stop block. Holes drilled for attachment to the cowl are checked to plus 0.001 in., minus 0.001 in. The gipsy quarter, companion piece of the stanchion, is also made in right and left, and is provided with a similar guide for a curtain, being used to guide the rear side curtain. The piece is built up of twelve pieces joined by arc welding, spot welding, and oxy-acetylene welding. Limits of accuracy corresponding to those mentioned in connection with the windshield stanchion are maintained. The box section construction obtained gives great rigidity. It is claimed that these four pieces, the two stanchions and two gipsy quarters, when the steel top of the car is attached, will support the entire weight of the car when inverted.

Checking Before Welding Begins

The steel top which attaches to these supports is composed of two side rails or channels, a rear rail, a number of cross members and two rear corner panels. The side and back rails are carefully checked for contour before welding operations on them are started. Curtain brackets are attached to the side rails. This work is done on a strictly production basis in a double jig, which, while enabling the men doing the work to make good pay, gives a low cost of production.

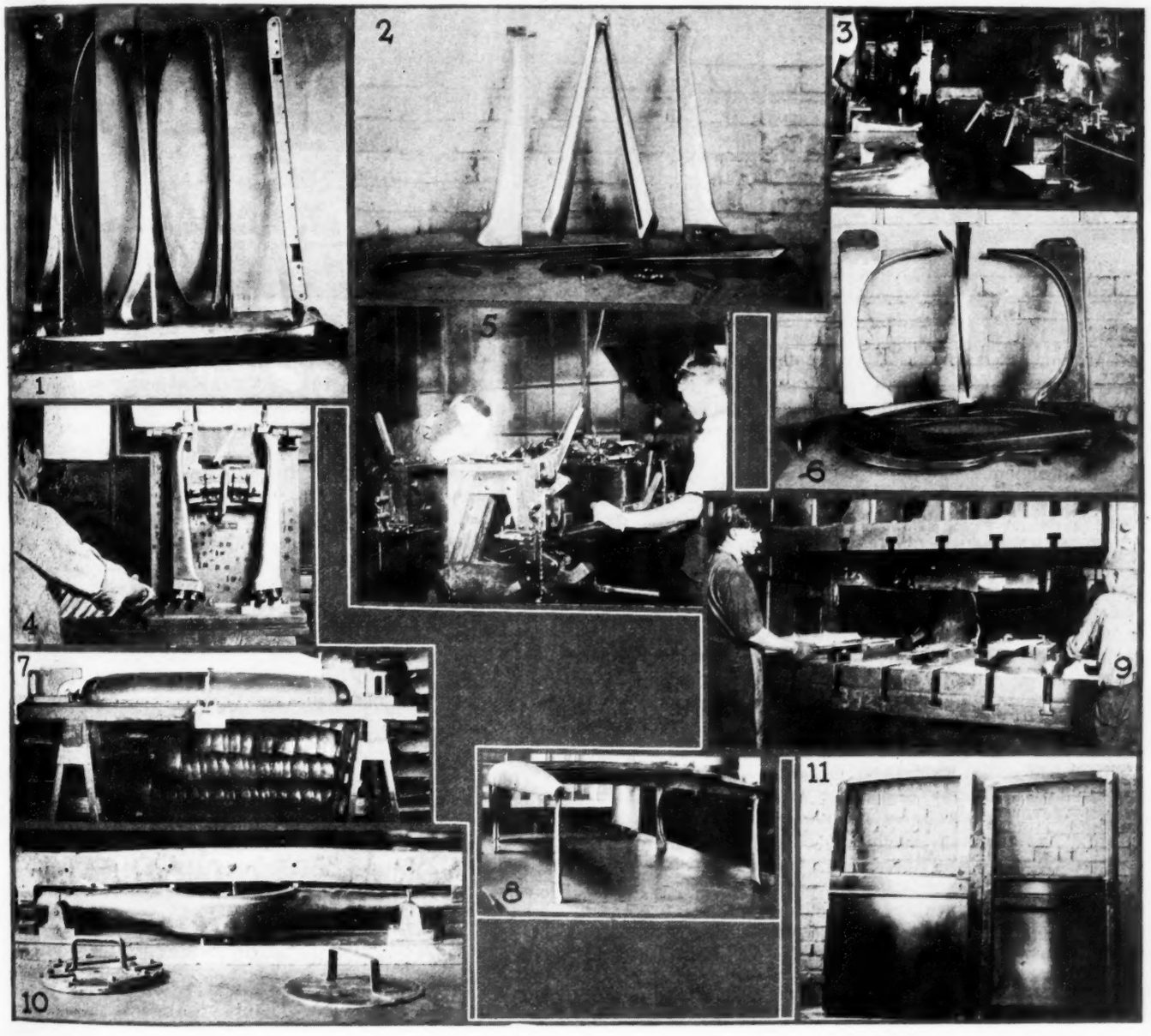
The welding is done by the arc process, the jig itself forming one pole of the circuit. Three men work on the operation, two loading and one welder following them around. The brackets are first set into fixtures on the jig, and the rail is clamped in place against them. The fixtures are so made that the brackets will go into them in the right way only, so that mistakes are impossible. Each cycle in the double jig completes a pair of rails and sixty-six pair are passed through per hour.

This is one of the assemblies on which the final welding is done at the customer's plant, the bulky nature of the assembled unit making this desirable. The various com-

ponent parts are assembled into a finished top, ready for the covering and lining materials. This plan has resulted in a great saving in shipping space and a consequent saving in freight charges.

While progress in welding methods has tended to decrease costs, at times a press operation may save over a weld. This is exemplified in the making of rear axle housings at the Heintz plant. It was formerly the practice to weld a reinforcing strip around the differential housing, for the tapped holes for the hand hole cover plates. This reinforcement is now made in the form of a folded flange made in a press before the half housing blank is formed. Three dies compose the folding set, the first taking the flat bank and bending the edges for the flange. The next step is a progressive fold and the last a setting down of the flange. This produces a double thickness of metal for the tapped holes. The three dies are used together under one double crank press, and three men tend the operation. The first sets in the blanks and operates the clutch, the other two (one of them at the back of the machine) move the work along to the second and third dies and out of the machine.

The two halves of the housing are seam-welded in a double head machine designed and patented by Heintz. Aside from the actual welding, work which is fast, the machine saves a good deal of time in clamping the two pieces together preparatory to welding. Several sets of clamping jaws and a pair of centering plugs for the ends



1—Showing successive steps in the fabrication of pressed steel windshield bases

2—Windshield stanchion assembled and in parts, showing rights and lefts and guide channel for curtain rolls

3—Loading stanchion into welding fixture. Two fixtures used, mounted on trolleys

4—Test fixture for windshield stanchion

5—Welding curtain brackets into side channels. This is done in a double fixture, two men doing the loading and unloading and one the welding

6—Gipsy quarters, right and left, and parts from which they are welded up

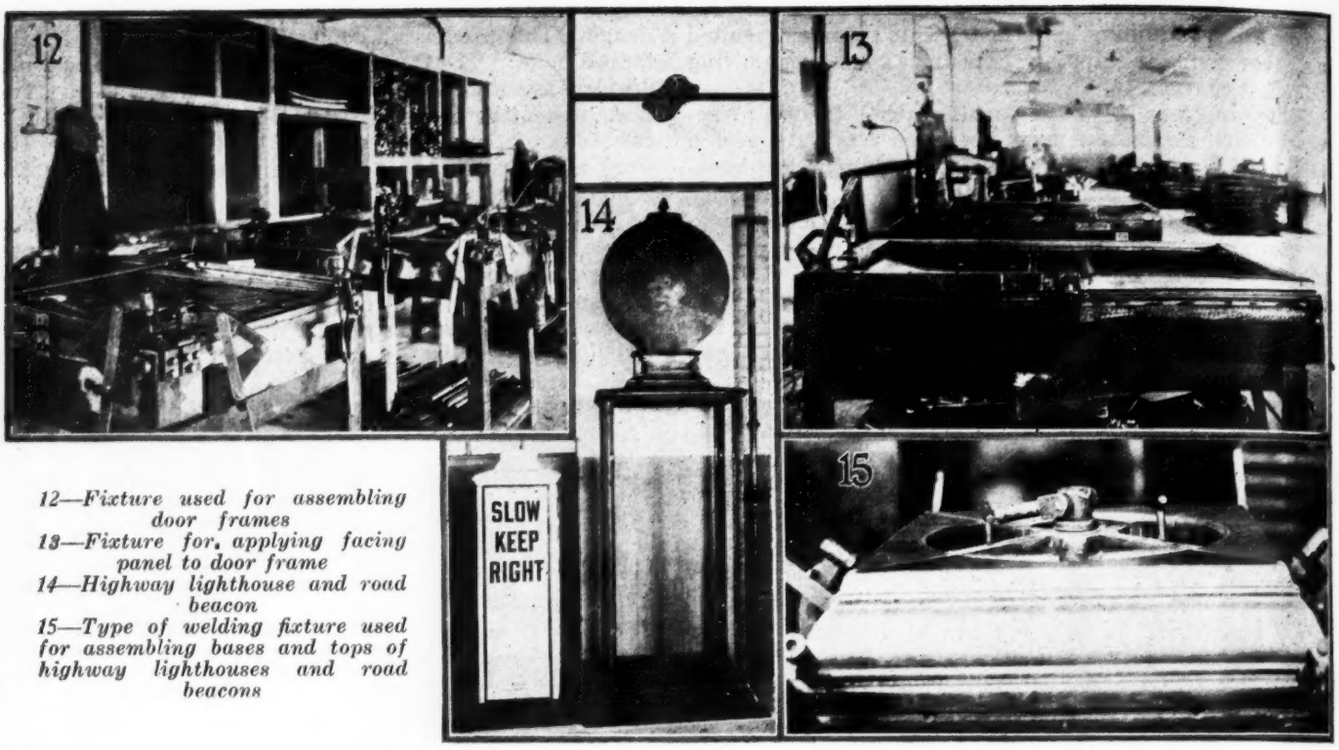
7—Type of testing fixture for testing side and rear top rails

8—Assembled frame of all steel permanent top for open cars

9—Folding reinforcement flange at differential opening in rear axle housing half

10—Test fixture in which rear axle housing is tested before spring saddles and bearing flanges are welded on

11—Non-weaving all metal welded taxicab door with tubular, welded on tubular re-enforcement at mid-height



12—Fixture used for assembling door frames
13—Fixture for applying facing panel to door frame
14—Highway lighthouse and road beacon
15—Type of welding fixture used for assembling bases and tops of highway lighthouses and road beacons

are all controlled by one air valve lever which serves to actuate one set of jaws after another as the lever moves through an arc. After seam welding and testing for alignment spring pads and bearing retainers are welded on in a jig by the arc process.

The alignment test for this axle housing is rigid. The housing is laid with the ends in vee-blocks, the central portion resting on hardened pins. It must lie without rock. A gage with vee-block ends is then set over it and the upper side tested. In the gage are four sliding flush pins which are provided with "go" and "not-go" limits. The upper end of each pin is ground in two steps. If the upper step is flush with or higher than the surrounding portion of the gage, the work passes, provided the lower step is flush with or lower than the gage. Similar flush pins are used for testing side alignment at each end of the housing. A circular center gage is used for checking the differential openings.

The result of using properly designed jigs is well exemplified in the building of taxicab doors. The particular door shown in the accompanying illustrations is of a design patented by the Heintz company. Its outstanding features are simplicity, rigidity and absence of wooden parts, which latter have a tendency to increase the cost of installation and to produce squeaking in service. The door is completely assembled in only two jigs from the basic elements to the finished door ready for paint, glass, hardware and upholstery without polishing of joints or other work except testing after leaving the second jig.

Welding Methods

The stiffening member of the door, which is depended upon for the non-warping feature, is a "torque tube" extending across its center, made of ordinary lap welded pipe. To this pipe are welded lugs for attachment by spot welding to the side channels. This portion of the door, including the top and bottom members is completely welded in the first jig. Incidentally, the top member itself is no mean press-operation, consisting as it does of a box section with a longitudinal arc, forming a curved top for the door. The assembly of the frame includes also the forming, from the various pressed pieces, of a channel guide in each side frame for the sliding glass panel which is later fitted. After the frame is completely assembled it is transferred from the first jig to the second. In this latter are placed the steel panel and facing pieces for the outside of the door. The frame is laid on these, which have a flange turned up all around, and clamped. The next operation is a turning over by hand of the flange on the panel over a locking flange in the frame. The flange is then set down by a swagging tool in a pneumatic hammer and welded in place, making an all-steel door so constructed that there is no possibility for warp, shrinkage or rattle of any loose parts. When taken from the second jig the door is ready for paint without polishing or other preparations. The joints are of the coach type and have no rough edges to be finished off.

Testing for Accuracy

The test consists in checking the holes for the attachment of the hinges, handle and upholstery and the checking by roller of the glass guides. These must be sufficiently free to permit of easy roll but not loose enough for play, as that would permit the glass to rattle.

Where final assembly of bulky articles is effected after the material has left the plant, it is essential that the assembling be done as soon after the arrival of the parts at their destination as possible. In the case of road beacons and highway light houses, which have been made by this company for one of its customers, the beacons are carried on motor trucks. When the point is reached at which the beacon is to be placed, it may be completely assembled by only eight bolts. To accomplish this simple assembly problem the beacon is made with base and top constructed of formed segments welded together. The stanchions are of Armco ingot iron and formed to hold the panels steady when set in place. In gathering the pieces for the base or top, a jig is used in which the segments are placed and a clamp is then applied to hold all pieces together. After the four corner pieces are welded, a simple polishing operation is all that is needed to finish the assembly.

America May Have to Build Small Cars to Meet Competition Abroad

Several manufacturers here known to be interested in model of the 50-60 cu. in. type, which is the big seller in Europe

By Norman G. Shidle

WHILE expert opinion in this country continues to be divided as regards the future of light cars of the 50-60 cu. in. displacement type common abroad, European manufacturers are going ahead pushing this type of vehicle, apparently with increasing success. Discussing the activities of French makers along this line, W. F. Bradley, writing in our issue of October 15, stated that "the permanent commercial success of the small European car in its home market, and its growing importance abroad, no longer can be doubted. It is responsible for the big increase in the number of cars in France and several other countries because it provides cheap individual transportation. In addition, in France 20 per cent of the sales are made to people who own a bigger automobile, but who find that a small car is more satisfactory for city service."

And in the same issue, writing of the Olympia Show developments, M. W. Bourdon points out that British makers have had an appreciable increase in business in many British colonies and that numerous British makers are planning 10 to 20 per cent increased output in 1926, "partly because of the re-establishment of the import duty but mainly because the British type of light car makes the biggest appeal."

These signs point to a constantly growing field for this type of vehicle, in Europe at least. The Automotive Division, Bureau of Foreign and Domestic Commerce, goes further, however, when it speaks in the August 31 issue of Commerce Reports of the increasing popularity of this small-type European-built car "not only in Great Britain, France and Italy, those countries which have done most to sponsor the small car, but also in the ever-widening circle of other countries which today are regarded as constituting real markets for American passenger cars."

Companies Here Show Interest

While definite anouncements of American activity along small car lines have not been made thus far several important companies are known to be experimenting seriously with models of this kind. The attempt of General Motors Corp., to purchase the Austin Co., Ltd., while unsuccessful, is regarded in many circles as clear evidence of interest in small car development for foreign sales on the part of the big corporation. It is interesting to note that Percy Owen, formerly chief of the Automotive Division, U. S. Department of Foreign and Domestic Commerce, now director of foreign sales for Dodge Bros., Inc., has been an advocate of the American-built small car as a marketable product in foreign fields ever since his return from a trip abroad last year.

In a letter to *Automotive Industries*, published August 13 of this year, Mr. Owen expresses the opinion that "perhaps some day the American manufacturer will produce a differently designed car for the foreign markets which will satisfy them. The design might be altered slightly for home consumption, but until we really recognize that the foreigner has a mind of his own and that we must judge him by his standards and not by our own, I feel that we are overlooking a very interesting step in the development of our foreign trade in motor cars."

Some light-car skeptics point out that if the light car is such a howling success abroad it is strange that there are several foreign makers of such vehicles who at least have been or are receptive to selling out their manufacturing and sales rights to American producers. They point to the near consummation of the Austin-General Motors deal as one example and to other less public dickerings which are known to have gone forward involving other interests as further evidence of their contentions.

Pushed by Big Producers

Certainly this phase of the situation is worth serious consideration by students of the small car question. It must be recognized, however, that light cars of the type mentioned (which should not be confused with cycle cars) are being pushed today by some of the most successful of the foreign producers such as Citroen, Fiat, Renault and others.

The big factor in light car success probably will be merchandising facilities in the long run. Low production costs and the consequent low price can come only through quantity production and quantity production can come only if the merchandising organization is large and powerful enough to put sales figures up high.

In this respect several American firms have a distinct advantage over any European manufacturer. A number of American producers already have established export outlets in practically every corner of the globe and already are carrying on a successful business with their present lines. The ready-made merchandising organizations would be a big factor in making successful any attempt to market a light car.

But, while marketing organization is likely to be the determining factor, the progress already made by European producers should not be overlooked. Several cars of this type already are being sold in France, for example, for less than $700, while Citroen has a model at $595 including the French luxury tax of 12 per cent. It is reasonable to suppose that these producers might be able to make even a better price under the stress of the strongest competition.

Thus, it seems that the possibilities for foreign sale of American-built light cars, while promising in many respects, would not be without serious problems of competition in marketing as well as in design.

Overhead Valve Motorcycle Engines Increasing in England

Manufacturers also giving more attention to engine lubrication and brake equipment. Four cycle engines replacing two-cycle for ultra-lightweight machines. More four-speed gearsets are used

By M. W. Bourdon

THE British Motorcycle Show this year at Olympia, London, did not produce any startling development of general application, but the exhibits indicated that most manufacturers have given more attention to engine lubrication and braking equipments. Overhead valves have increased in number, as also have four-speed gearsets, while there is a noticeable trend towards the adoption of four-cycle engines in place of the two-cycle type for the smallest practical class of machine, what is generally referred to as the ultra-lightweight.

Development in engine lubrication is mainly towards the elimination of the human element; in other words, towards rendering the maintenance of the correct oil feed independent of the rider's judgment. Mechanical pumps in place of the hand-operated type have been more in evidence for two or three years past, but only of late have they served for anything except delivering oil to a sight-feed device that either required regulating according to the running conditions of the moment or else was supplemented by a hand pump to give extra oil for hill-climbing, etc.

Feed Regulator Omitted

The present show indicates, however, that the mechanically operated pump is now considered capable of taking care of engine lubrication almost automatically, for though in the vast majority of cases a feed regulator is still included, the latter is being omitted for the first time in certain instances. The reason is that a dry crankcase or sump system of lubrication is being adopted, with oil delivering direct to the crank bearings through a drilled crankshaft. At present there is no generally followed plan in this connection; the point of delivery into the shaft, the number of bearings fed under pressure and other details show wide differences.

In a new two-cylinder horizontal Douglas—an introduction that has aroused considerable interest—the pump, driven from the timing gear creates a negative pressure in the sight-feed device, causing the oil to flow from the tank, under control of the needle valve adjustment, and pass down a pipe to the pump, which forces the lubricant through the center of the crankshaft. The latter is drilled in such a way as to lead the oil first to a central "well" in the middle web of the crank and thence to the big-end bearings.

In other engines the pump picks up oil from the sump and delivers it under pressure directly to the crankshaft, while in a third class the oil, after reaching the sight feed under pressure, runs to the drilled crankshaft by gravity. Lubrication systems on these lines, modified in various ways, appear on both two-cycle and four-cycle engines, the "petroil" (oil mixed with gasoline) system having given way extensively to mechanical lubrication on even two-cycle engines.

The internal expanding type of brake has secured still wider adoption, developments in this direction being the use of larger diameter drums and wider shoes, giving a bigger frictional area (in the new Douglas the area is approximately 25 sq. in.) and an adaptation from car practice in the form of a floating pivot for the shoes, so affording a self-wrapping effect or semi-servo action. Triumph, with one of the three biggest outputs of motor cycles in Great Britain, has adopted shoes of this type; likewise Douglas and one or two other firms. But the V shoe applying in a special rim is not defunct; Rudge continues this type with an inter-connected pedal operation for front and back wheels, though the front brake alone can be operated by hand.

Four-speed gearsets are available on a larger number of makes. Sunbeam offers this feature on one model for the first time, while on the P. & M. machines last year's four-speed box has been modified with the result, it is claimed, that there is no need for declutching when the gears are changed either up or down. Rudge, with four speeds, now has only two ratios with skew gears, instead of all four as hitherto. Constant mesh three-speed gears with dog-clutch engagement are found on several additional machines.

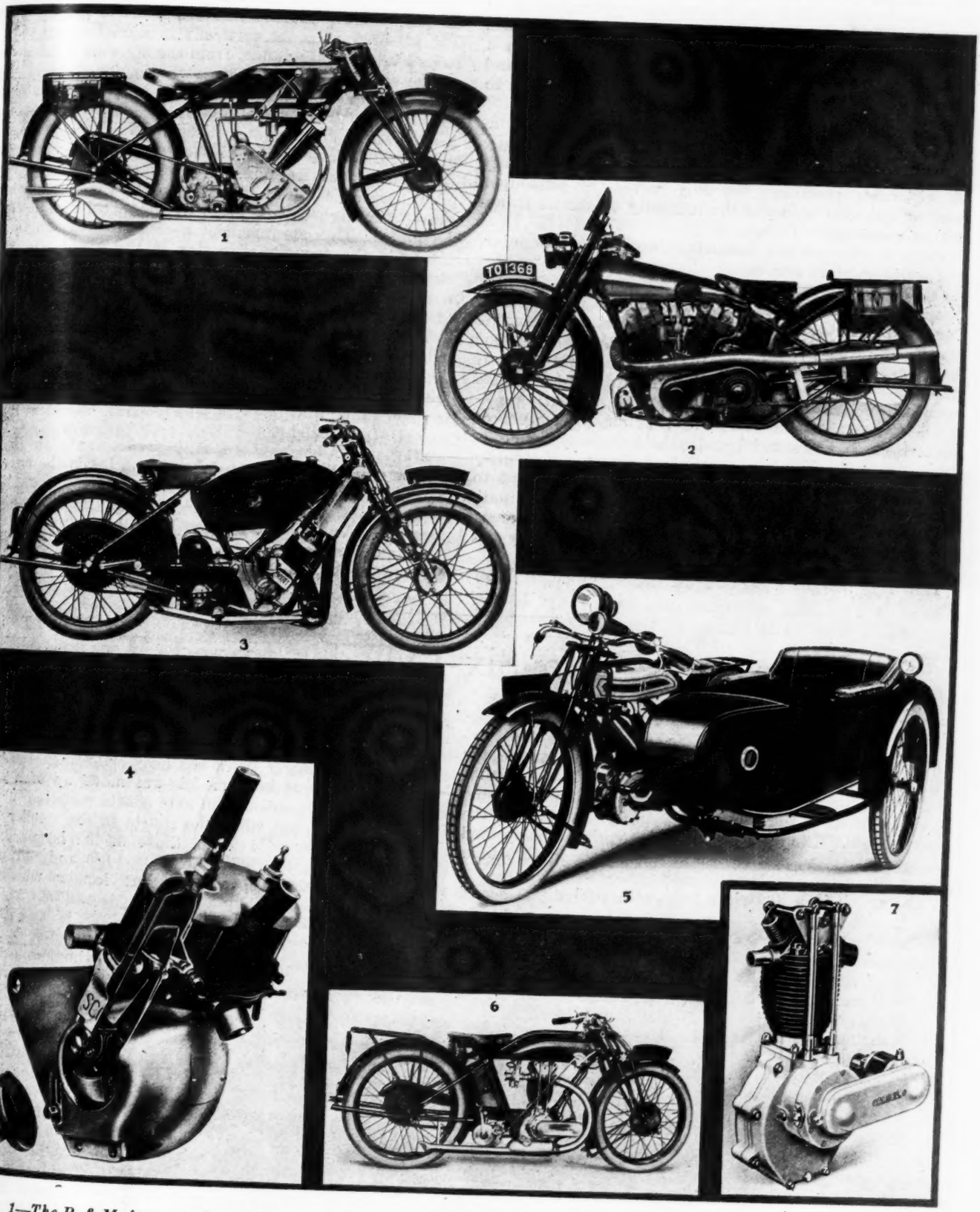
All-chain drive is becoming universal, even on the smallest and cheapest machines, a supplementary trend in this direction being indicated by the provision of two "shock absorbers" in the transmission, one in the primary drive and the other in the gearset or on the rear wheel.

More Overhead Valves

Overhead valves are more in evidence than at any previous show. The lubrication of the rockers is usually effected through hand-replenished oil cups or by grease gun, though there are isolated examples of direct and continuous oil feed to the rocker bearings, as well as, in all cases, to the exceptional engines that have an overhead camshaft.

Easily detachable and interchangeable wheels have not increased at all; balloon tires up to 3½ in. are standard-

Some of the New Cycles Seen at the British Show



1—The P. & M. four-speed machine on which, it is claimed, the gears can be changed without using the clutch. 2—The overhead valve, 8-45 hp. Brough Superior, the most expensive of British motor cycles, price for the solo machine being £170.3. 3—One of the Scott machines, the only water-cooled British motor cycle. The model shown has a road speed of 80-85 m.p.h. and weighs 240 lb. 4—Two-stroke water-cooled motor of the Scott machine. 5—The 5 hp. Triumph single-cylinder sidecar outfit. 6—New model 5 hp. Ariel with overhead valves and 8 in. diameter brakes. 7—The 5 hp. Ariel overhead B valve engine which has a bore and stroke of 81.8 x 95 m. m. and direct mechanical lubrication.

ized in only a few cases, and there are no new rear-sprung frames, except in the new "de luxe" Ner-a-Car. The latter has quarter elliptic rear springs horizontally arranged each side of the rear wheel, a four-cycle 3½ hp. engine with the cylinder only exposed, front mudgard as wide as the footboards are apart, cowl, instrument board, front windscreen of Triplex glass, bucket seat with a pneumatic cushion and the fuel tank behind the seat, and one or two other features that cause it more or less to resemble a car on two wheels.

Rudge has introduced a novelty in sidecar frame construction. In this case the "chassis" consists very largely of spring steel plates, giving a large measure of flexibility to the construction and not only increasing passenger comfort but also reducing the intensity of shocks transmitted to the cycle frame.

Tandem sidecars are becoming increasingly popular, and single-seaters are being offered with even "super-sports" cycles—slightly modified racing mounts, founded upon the machines that were designed for this year's Tourist Trophy races in the Isle-of-Man. Sidecar outfits of 2½ hp. are so numerous as to be observed without comment, but at present the ultra-lightweight type of machine—inferring an engine of 1¾ hp. or under—has not yet been asked to undertake passenger work.

There are many additions to that smallest class of motor cycle, but although previously the two-cycle engine —mainly of the Villiers range—had almost a monopoly in this field, the four-cycle engine has commenced to form a serious competitor and may in time predominate in this class, just as it does now in the lightweight category (2½-2¾ hp.), where only two or three years back the two-cycle engine held sway.

Into this market a well-known maker (Raleigh, associated with the makers of the widely used Sturmey-Archer gearsets) has entered with a new model that has set up a new standard of value in the ultra-lightweight class. This new machine has a four-cycle L-head engine of 1¾ hp., all-chain drive, two-speed gearset as a unit with the crankcase and kick-starter, priced at £28. The power-plant is set vertically in a cradle formed by a looped tube running down from the steering head and up to the saddle; the internal flywheels are of steel, with integral crank journals, and fixed together by a separate crankpin for a roller big-end bearing. Ball journal bearings are fitted and each crank axle carries a spur pinion. The latter, on each side of the crankcase, mesh with large diameter spur gears mounted loosely on a plain bearing countershaft and locked thereto, when required for high or low gear, by a central double-ended dog-clutch. This arrangement necessitates the engine rotating in the opposite direction to the usual, viz., anti-clockwise viewed from the right. The final gear ratios with the chain drive are 7½ and 12 to 1, while the weight of the fully equipped machine is well under 200 lb.

The low top-gear ratio of th new Raleigh is in accord with an almost general trend. Ratios of 5½, 6 and over 6 to 1 are by no means unusual, and yet speeds of up to 55 m.p.h. and over are attainable, engine speeds running up to 4000 r.p.m. and more in some of the lightweight machines of 2½-2¾ hp.

Single-cylinder engines still predominate in British practice in all sizes up to 5 hp. Douglas is the only big maker using two cylinders exclusively, these all being horizontally opposed. The 3½ hp. machine is still the most popular general service type, both for solos and combinations, though 5 hp. solo mounts between £40 and £50 are one of the features of this year's show.

Stewart Adds Two Six-Cylinder Speed Trucks

TWO new six cylinder speed trucks, the 16X of 1¼-tons capacity and the 17X of 1½-2-tons capacity, have been placed on the market by the Stewart Motor Corp., Buffalo, N. Y. Both of these new models are equipped with a 3¼ by 4½ in. engine developing 45 hp. on the block as fitted to the smaller and 60 hp. as fitted to the larger truck. The crankshaft of the engine is supported in four bearings. A Zenith carburetor is fitted and a Remy generator and ignition unit.

The clutch is a dry plate type with twelve plates and the transmission the conventional three-speed and reverse, bolted to the bell housing of the engine. The steering gear is a Gemmer, with spark and throttle levers on top of the steering wheel. The horn button is located at the center of the steering wheel.

The frame is of pressed steel with a maximum depth of section of 6 in. The front axle is of the drop-forged type with taper roller bearings on the wheel spindles.

So far the specifications of the two truck models are alike, but the larger truck has heavier springs and axles. The rear axles of both models are made up of a single piece cast steel housing and axle shafts mounted in taper roller bearings, but while the shafts in the smaller truck have a diameter of 1⅞ in., those in the larger have a diameter of 2⅛ in. Wheelbases are 130 and 145 in. for the two models respectively, but longer wheelbases can be furnished.

Wheels are wood-spoked on the smaller truck and cast steel on the larger. The former is equipped with 33 by 5 in. cord tires and the latter with 32 by 6 in. The chassis weigh 2,750 and 3,350 lb., respectively. The small chassis takes an 8 ft. body and the larger one a 10 ft. body, measured from behind the driver's seat.

Stewart 1½-2 ton speed truck

Traffic Congestion Costing Manhattan $500,000 Per Day

Motor transport problem studied by Metropolitan Section, S.A.E., at first Fall meeting. Specially designed streets are advocated

By Leslie H. Allen

WITH motor transportation having developed far beyond anything visualized at its birth, and with the number of cars and trucks in use increasing each year, the problem of traffic congestion has assumed such amazing dimensions that its solution demands intensive study by the best minds within and without the automotive industry.

The Metropolitan Section of the Society of Automotive Engineers at its first Fall meeting in Hotel Majestic, New York City, Thursday evening, October 15, listened with keen interest while means of reducing traffic congestion were discussed by John C. Long, secretary of the Traffic Planning Committee, National Automobile Chamber of Commerce; Harold M. Lewis, executive engineer, Regional Plan of New York and Its Environs; and Major Elihu Church, transportation engineer, Port of New York Authority.

Here are some interesting facts brought out in connection with a study of the New York situation:

Into the heart of the business district, south of 59th street, during 24 hours of a typical business day last year, there came 204,750 vehicles which, if moving in a single lane with a minimum spacing between cars, would extend from New York City beyond Salt Lake City. On the Boston Post Road, the Albany Post Road and the Lincoln Highway near New York, traffic now varies from more than 1400 to more than 1600 vehicles per hour.

Traffic Doubles in Seven Years

Figures worked out by the Regional Plan of New York and Its Environs show that two years ago there was in New York City one vehicle for each 16 persons. By July 30 this year this had been increased to one for each 13 persons. If the population of Greater New York in 1935 reaches 12,000,000, which is regarded as a fair figure, motor vehicle registration in the greater city will be something like 3,150,000. Traffic on the principal highways is increasing so as to double in from four to seven years.

Despite safety campaigns, motor vehicle fatalities are nearly 1000 per year in this district, and increasing traffic delays caused by congestion are illustrated by the fact that a trip from Kingston, N. Y., to South Brooklyn on a holiday this year required 14 hours to cover the 100 miles, and a Sunday afternoon drive from Jackson Heights to Garden City, about 15 miles, consumed three hours. Based upon studies made in other cities, the cost of traffic delays on Manhattan Island is estimated at $500,000 per day.

To save the money now lost through delays traffic must be speeded up, and to save lives it must be speeded up safely. How this two-fold purpose may be realized is a subject to which automotive engineers are giving more study now than ever.

Mr. Lewis described congestion as unregulated and unplanned concentration which could be relieved by greater concentration, not of the entire mass, but of its individual parts by sorting out and separation of different types and routings of traffic. Larger freedom and efficiency would result from concentrating different types of traffic on routes planned primarily for them and so laid out as to furnish direct connection between populated districts.

Limit of Regulation Reached

Suitable methods of regulating traffic movement were merely palliative and, in New York City at least, traffic control in main business centers had already been carried to the maximum desirable limit. There should be larger use of restrictive regulation, such as limitations upon truck unloading from the street surface on busy thoroughfares, further limitations of parking and the segregation of various types of traffic. More owners of trucks should follow the example of the several who had voluntarily installed loading and unloading spaces within their building lines and the movement to compel general adoption of this method is gaining headway. Segregation should separate through and local traffic and trucks from passenger vehicles. Denver has a zoning act which compels all buildings in the commercial district to install loading places inside the building lines.

Traffic relief could also be furthered by zoning which would limit the height of buildings and thus decrease the number of people and their vehicles which congest a certain section during business hours. But Mr. Lewis described physical improvement of the highway system as the most positive relief. London and Buffalo have begun construction of by-passes around central congested districts. New Jarsey is planning to by-pass the Newark metropolitan district by the new State highway. Such by-passes could readily be developed along waterfronts. Old cities such as Algiers and new ones like Rio de Janeiro are far more progressive in waterfront use than American cities. Antwerp has provided a promenade on the roofs of freight sheds bordering her commercial waterfront, and Mainz has combined a boulevard and freight use of the Rhine shore. Other methods of relief included separation of grades, street widening and arcades.

Major Church sees the motor truck causing as revolutionary a change in transportation as the railroads did. The railroad builders lacked vision, resulting in terminal congestion, and already motor trucks are actually crowding themselves off the city streets. Contrary

to popular belief the motor truck has not driven out the horse. On West street, in Manhattan, a commercial waterfront thoroughfare, 72 out of every 100 trucks are horse-drawn, because the cost of trucking should be measured by time, not by distance. It costs the same to keep a truck on the streets, whether moving or waiting, so that the question is not how far the truck must travel, but how long the trip will take.

Truck service can be no better than the roads or the traffic conditions. The truck designed to travel 20 miles an hour carrying a five-ton load cannot as a rule, because of traffic congestion, make an average of more than four miles an hour within cities or carry an average of more than a ton and a half, and rarely is a truck actually in use more than three hours in every eight.

These averages are low chiefly because of the multiplicity of freight terminals and under present conditions the truck is better adapted to long distance than to terminal hauling. Terminal hauling costs are often from ten to thirteen times the railroad line-haul charges.

Motor trucks can help to lower hauling costs if they are given a fair chance. At present they cannot give full service. They are underloaded because of the necessity of hauling separate loads to terminals whose location is unnecessarily far apart. This and traffic congestion causes unnecessary delays in hauling and delivery and low speed.

To lower trucking costs congestion must be reduced. Unified terminals would increase the load, traffic regulation would increase the speed, and convenient location of terminals would decrease the distance, all these factors tending to decrease congestion. Loading and unloading time could also be cut down by providing adequate tailboard space, sufficient cars, less congestion caused by narrow piers, and less lifting.

Major Church was convinced that the real place of the motor truck in transportation would be more and more realized as the long distance hauling field. It has been proved many times that in the long haul the truck can compete with the railroad to the distinct disadvantage of the latter. For example, the Underwood Typewriter Co. has fitted a truck with 300 felt-lined compartments carrying 300 typewriters. These loads are brought direct from the Hartford, Conn., factory to New York, and with no boxing costs and no necessity for re-delivering between terminals and destination.

Trunk Line Highways

But growth of motor trucking on highways between cities will necessitate their separation from passenger cars in order to save time of both. To accomplish this, Major Church advocated motor truck trunk-line highways, belt and shore lines. These trunk lines would have easy curves and grades, just like the railroad lines, and along them trucks would be dispatched just as trains are dispatched on a railroad. Motor truck traffic of the future along these trunk-lines would consist of tractors hauling trailers with air brakes operated by the driver just as the engineer operates the air brakes on railroad cars.

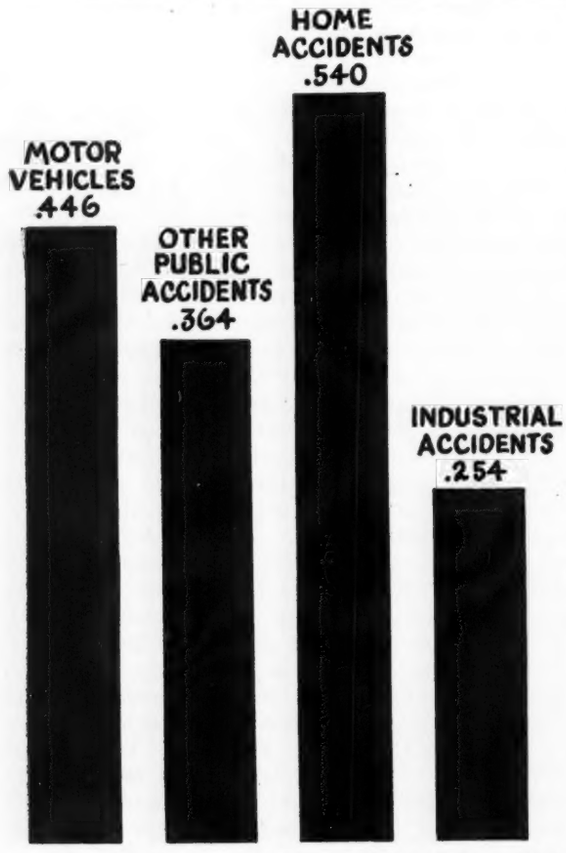
There must be belt lines feeding out of these trunk-lines around cities because cities need their streets for domestic traffic. This would decrease traffic noise in cities, cut down the amount of carbon monoxide dust in the atmosphere, and lessen the possibilities of accidents to pedestrians, to say nothing of saving money now caused by traffic delays on city streets. Along these motor truck trunk-lines the cities of the future would be built, with home industries increasing through the wider dissemination of electric power.

Major Church held that for the construction of such trunk-line roads the taxpayer could not be charged; he was paying all he could pay now for highways. Hence Major Church believed that the trunk lines would be constructed and operated by private capital as toll roads, with the user paying directly in proportion to his use of these roads.

The difficult problem of feeding these trunk lines into cities might be solved by constructing elevated roadways over existing railroad tracks. The railroads, Major Church thought, would welcome this innovation, because it would mean their sharing taxation with the private trunk line companies.

Mr. Long reviewed the large number of organizations now studying the traffic problem. The S. A. E. standardization methods, he said, are valuable in helping to speed up traffic and other organizations working on the problem include the Highway Research Board, the U. S. Bureau of Public Roads, the Association of State Highway Officials, the Eastern Conference of Motor Vehicle Commissioners, the International Conference of Police Chiefs, the American Electric Railway Association, the American Railway Association, the A. A. A., the National Bureau of Casualty and Surety Underwriters, the Highway Education Board, the N. A. C. C., the National Conference of Street and Highway Safety, the National Safety Council and various unofficial organizations.

Discussion under chairman Neil McCoul, of the Texas Oil Co., developed pleas for more trucking at night, a new official in each city to superintend traffic, better headlight regulation, and such improvement in general conditions as to make 100 per cent use of present facilities possible.



Despite the high automobile accident death rate in the United States, a person is still safer on the street than at home, as the above chart shows. The chart is based on figures compiled by the National Safety Council and gives a comparison of death rates per million of population per day from the four sources indicated